TWENTY-FIRST YEAR.

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VOLUME XXI. NEW YORK, FEBRUARY, 1890. No. 1.

THE JEWELERS' CIRCULAR

AND

HOROLOGICAL REVIEW.

OFFICIAL REPRESENTATIVE OF THE JEWELERS' LEAGUE, THE NEW YORK JEWELERS' BOARD OF TRADE, AND THE JEWELERS' SECURITY ALLIANCE.

It is also the Recognized Exponent of Trade Interests.

A MONTHLY JOURNAL DEVOTED TO THE INTERESTS OF WATCHMAKERS JEWELERS, SILVERSMITHS, ELECTRO-PLATE MANUFACTURERS, AND THOSE ENGAGED IN THE KINDRED BRANCHES OF ART INDUSTRY.

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THE JEWELERS' CIRCULAR PUBLISHING CO.,
189 BROADWAY, NEW YORK.

☞ *Advertising rates made known on application.*

GOSSIP OF THE MONTH

☞ A full Index to Advertisements and a Table of Contents will be found on Page 5 of this issue.

Subscribers will do a favor by notifying us at once upon the non-receipt of any number of THE CIRCULAR. The mails will occasionally miscarry, but we will cheerfully make good Uncle Sam's little shortcomings by sending another copy to replace any missing one.

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JEWELERS are becoming conspicuous as feasters. Metropolitan, eastern and western boards and societies all must have their annual or semi-annual dinners. The banquet of the New York Jewelers' Board of Trade at Delmonico's, on the evening of the 21st, adds another wreath to the laurels the trade has won in the halls of Epicurus. So decided a social success will surely redound to the advantage of the board in its purely mercantile labors, as well as increase the respect in which the trade is held by the community at large. The reputation for conviviality which jewelers enjoy is a thing to be proud of. It indicates a solidarity and a breadth of mind among them that find their due reward, not only in more agreeable business intercourse, but also in the pecuniary advantage of all concerned. The era of association and co-operation is dawning. The old narrow competitive feeling is giving place to a more liberal and rational spirit, and not the least noticeable of its manifestations is the freedom and sociability which made the first annual banquet of the New York Jewelers' Board of Trade so bright a chapter in trade annals.

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See article on United States Standard Time in this number.

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WE present to our readers in this issue the first installment of an article on watch and clock escapements by the late Dudley W. Bradley. The frequent calls received at the office of THE CIRCULAR for a thorough treatise on the subject prompted the managers to cast about for such a work. For sometime none was found, but our search has at length been successful, and we take pleasure in bringing before the trade what is probably the only compilation of the kind ever made. It represents years of careful research by one of the most learned horologists of this country, who was for many years connected with the Seth Thomas Clock Co. in charge of the tower clock department of their business. He was a life member of the Polytechnic Society of the American Institute, and had long been engaged in preparing a lecture on escapements, to be delivered before that society. His death alone prevented its delivery, and it is now published for the first time. The drawings with which the article is illustrated are the result of much labor on Mr. Bradley's part, and greatly enhance the value of the treatise. Though the bulk of the matter contained in this lecture may be found in various horological works of the last century, no separate treatise of this kind had previously been attempted. Watchmakers who follow the series in this and the three succeeding numbers in which it will appear, are assured the time will not be wasted..

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"The Circular" casts its first vote. It long ago received the votes of the trade.

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THE action taken by many of the western jobbers in notifying the eastern manufacturers that they would not be ready to look at samples before the middle of January, is a step in the right direction. In the midst of holiday sales or stock taking the jobber is not in a position to buy judiciously. He does not know how he stands, what goods he has on hand, or what he wants. Sales made under such circumstances, therefore, are as little satisfactory to the jobber as to the manufacturer. The orders given are not apt to be large, and before the goods are sold their freshness is worn off for the jobber, and new goods must be offered to appease the craving for novelty. Some of the manufacturers disregard the wish of the jobbers and sent their men out in December. Whether they will reap any advantage from this haste remains to be seen, but it is extremely doubtful. They certainly will not if the jobbers adhere

to their resolution. All that is needed to put a stop to this forcing of the season is that the jobbing trade should refuse to look at samples before the first of January, at the earliest, and stick to it manfully. The spring season will then be more satisfactory to both parties.

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"Development of the Lathe," by Ambrose Webster. Page 95.

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THE task of educating and instructing the public belongs, without doubt to the trade and class journals. While daily newspapers are gloating over scandals and sensations of all kinds, or distorting facts for selfish ends, the trade journal is reporting the world's real achievements—the progress of invention, the discoveries in the arts and sciences and every laudable individual attainment. The newspaper is concerned chiefly with the world's follies and vices, and does not even pay virtue the homage of satirizing them. If a man wishes to be written up in the newspapers he must do something wicked or foolish. Hence there was a void left in the journalistic field. The trade journal sprang up to fill it. When the newspapers find that by running riot in the household, even to the closet, they have earned their own condemnation, they will have to confine themselves to more legitimate sources of news. Meantime the trade or class journal flourishes, strong in its chosen narrow field—the record of commerce, science and art—performing for its constituents a necessary and useful mission.

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Exhaustive article on "Watch and Clock Escapements." Most Complete ever published. By Dudley W. Bradley. To be continued.

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THE spirit of organization is growing rife among the retail trade. Scarcely a month passes without a move in this direction, either local or general, in some part of the country. During the past month a good deal of interest was centered in the convention of the Pennsylvania Retail Jewelers' Association, held at Philadelphia on January 8th. This young association has already developed beyond the experimental stage, and if wisely managed, seems destined to wield great influence for the betterment of the trade. The speeches delivered by members at the convention had the ring of sincerity and conviction. A plan of procedure has been offered for adoption. Over one hundred names are already on the roll, and others are constantly being added. Not content with a limited field, the association is reaching out its hands to welcome the entire State of Pennsylvania, and even to affiliate with distant organizations of similar purpose. Whether all the co-operative features of the pooling plan outlined at the meeting will prove practicable time will show. Experience will probably render some changes necessary, but however this may be, the fact remains that the retail trade have grievances that organization will do much to remedy. The jobbing trade is well organized to being with, and this fact gives them much advantage over the unorganized retailers. Organization in the upper branches of the trade has at length stimulated organization in the lower branches. The energy with which the work has been begun, and the general interest manifested, show a strength of purpose not easily to to be balked by the difficulties always to be encountered in movements of this character. Whether all the results hoped for will be attained or not, the present movement is fraught with many benefits. It will stimulate and educate its members, and foster a spirit of fraternity, forbearance and mutual helpfulness, the lack of which has been one of the chief obstacles in the way of improvement among the retail trade.

*** *** ***

First instalment of a serial on "Clock Decoration" historically considered. Page 65.

ALONG with the "grip" epidemic an epidemic of window smashing seems to have struck New York, and the jewelers have had to bear the brunt of the double visitation. Whether there is any connection between the two might be a matter for speculation among our health boards and medical societies, if more fruitful topics are lacking. It is certain that the peculiarly distressing malady that has prostrated so many in the last two months has shown a tendency to get into the heads of many of its victims, and has even led some to self destruction. What more natural, then, than that one phase of it should manifest itself in the destruction of property instead? Window-smashing epidemics which have been of frequent occurrence in the past, are nearly as hard to protect one's self against as the influenza. About the only sure thing for the jeweler to use against the window smasher is a wire netting or grating placed before his window. The only objection to this is that it obstructs the view, and hence makes the display in the show window much less effective. It is a choice of two evils, however. Desperate characters will always take desperate chances, and policeman are not ubiquitous.

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"The Buried Chronometer." Illustrated poem. See page 93.

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OWING to the prevalence of the dreaded "grip" among its members, the secretary and other officers of the union being stricken down, the January meeting of the Watchmakers' and Jewelers' Union did not take place. "Our Round Table" is therefore necessarily omitted from this issue, but we can assure our many readers throughout the country, who have signified their interest in the discussions of this body, that, the plague permitting, the February meeting will be held as usual, and will be reported in our next issue.

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Read the article on the "Determination of the Longitude by the Chronometer."

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A NUMBER of subscribers have suggested that the paging of THE CIRCULAR be changed to the old style, advertisements and reading matter separate. After giving the matter full consideration, it was decided that the present system of paging was preferable to the majority of our patrons. The next index, however, will be so prepared that reference to articles will be made as easy as under the old method.

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"The World of Invention." Always open to inventors and patentees.

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SEVERAL articles prepared by European horological writers of note for the present issue, were crowded out by reports of annual conventions and banquets, but will appear in the March number.

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Parisian novelties illustrated on page 81.

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THE monthly Treasury report for November contains the following statistics of interest to the trade: Exports of clocks and parts thereof, 1889, $136,370; 1888, $81,177. Watches and watch materials, 1889, $27,619; 1888, $40,700. Jewelry and manufactures of gold and silver, 1889, $80,834; 1888, $35,200. Plated ware, 1889, $47,405; 1888, $47,278. Imports of clocks and parts thereof, 1889, $64,932; 1888, $50,454. Watches and watch materials, 1889, $164,641; 1888, $145,573. Jewelry and manufactures of gold and silver, 1889, $104,514; 1888, $64,184. Precious stones and imitations, unset, 1889, $630,874; 1888, $668,947. Rough or uncut diamonds, including glaziers' diamonds, 1889, $6,025; 1888, $24,656.

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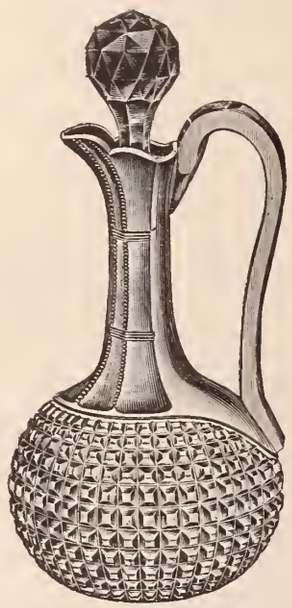
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A Solicitation.

WE respectfully solicit a trial order from legitimate Jewelers who have not dealt with us heretofore. We are confident that such a trial order would result in their continued favors to us, judging from the fact that we seem to hold ALL our trade against fierce competition and that these loyal customers are eloquent in the praise of our Principles, our Prices, and the quality of our Goods. The past year has witnessed a remarkable accretion to to the total of our customers, until now they can be found in every State and Territory from the Lakes to the Gulf, and from the hither to the farther ocean.

Our lines are these: WATCHES, CHAINS, WILLSON'S SPECTACLES, TOOLS and MATERIALS. Whatever is covered by these items can be found here in abundant variety, at prices consistent with our great saving in expenses over similar establishments in New York and Chicago; and they are sold under certain broad Business Principles looking to the protection of the Trade, as exemplified in our faithful adherence to these Rules: No Goods Sold at Retail, No Goods Sold to Peddlars, Price Lists sent to Legitimate Jewelers only.

We therefore solicit a trial order. We believe you will be pleased with our goods and profited by our prices, and that your self-respect will be advanced in encouraging a Jobbing House which is endeavoring in absolute sincerity of purpose and effort to correct existing trade abuses.

Bowman & Musser,

Jobbers in
Watches, Chains, Spectacles, Tools and Materials,
LANCASTER, PA.

OFFICE OF

United States Watch Co.,

WALTHAM, MASS.

JANUARY, 1890.

TO THE TRADE—GREETING:

For the manifold evidences of the regard in which the jobbing and retail trade hold the products of the ***United States Watch Company,*** Waltham, Mass., as indicated in 1889, (the most successful year in the history of the company), we take this opportunity of making due acknowledgment. Appreciating the demands from our patrons, for a largely increased output of our movements, we have vastly enlarged our capacity for production, and are now prepared to promptly fill orders for two hundred 16-Size, ¾-plate O. F., 18-Size, ¾-plate O. F., 18-Size full plate H't'g, and 6-Size H't'g movements, gilt and nickel, in all grades from 7 to 16 jewels, per day.

The cumulative testimony of jobber, retailer and customers, warrants us in asking the entire trade to compare our goods, grade for grade—their design, nicety of adjustment, perfection of finish and accuracy of time-keeping qualites, with those of any manufacture, domestic or foreign. Indeed it is the verdict already given wherever the United States Watch Co.'s movements have been introduced, which has produced a demand that our best efforts were not sufficient to supply last year, as scores of the first jobbers in the country can testify. Profiting by experience, our added tool factory and manual power justifies us in assuring ***The Trade*** that its favors during the year 1890 will be filled with promptness.

The company cordially invites the jobbing and retail trade to inspect its manufactory at ***Waltham, Mass.***

EMIL C. HAMMER,
Treasurer.

Obituary.

ROBERT A. JOHNSON.

Though the epidemic during the past several weeks, with its train of deaths, almost blunted the idea of death in the mind of the average man, and caused him to regard the reports of deaths with mixed sensations of stupidity, fear and inquiry as to who would be the next called, yet when it became known in the trade on January 6 that Robert A. Johnson, familiarly known as "Bob" Johnson, of the Celluloid Enamel Co., had died at the Allen House, New York, on the morning of that day, deep regret was expressed on all sides, for the deceased had been one of the most highly respected and popular men connected with the jewelry trade.

For almost forty years Mr. Johnson had been associated with jewelry and kindred interests, having, in 1850, at the age of fifteen years, entered the then newly-organized jewelry firm of Brown, Palmer & Dwight, New York, as office boy. He remained with this house until its failure soon after, when he took a position with M. W. Brown & Co., composed of M. W. Brown and C. K. Colby. At the former's decease, Mr. Colby admitted Mr. Johnson to partnership, the style of the new firm being Colby & Johnson. They manufactured a superior line of watch cases, and continued business relations until 1888, when Mr. Johnson withdrew to accept the presidency of the Celluloid Enamel Co., manufacturers of show cases, which position he held at the time of his death.

Mr. Johnson was well known as one of the organizers of the now widely-powerful Jewelers' League, his certificate being No. 2, the No 1 being that of Gilbert T. Woglom. His connection with this organization has been continuous since its founding, having most of the time served as one of the four vice-presidents, and being its first vice-president at the time of his death. The executive committee of the league held a special meeting on January 7, adopted resolutions tendering their sympathy to his bereaved family, and decided to attend the funeral in a body. The deceased was a man of unusually generous impulses, and possessed a decidedly happy disposition. These, combined with his sterling business qualities, inspired for him the highest admiration in the minds of all with whom he came in association.

GEORGE W. ROYCE.

When the news circulated through the trade on Monday morning, January 6, that George W. Royce, of Peterson & Royce, had died the Saturday previous in London, England, the trade was thoroughly shocked, and expressed such regret as is only occasioned by the decease of a popular man. From private advices it was made known that Mr. Royce had been taken ill with a severe cold about ten days before his demise. The cold developed into the terrible pneumonia. He fluctuated between hope and fear, and it was only the day before his death that word was received that he had almost recovered.

Mr. Royce left New York on December 1st last, on a visit to the diamond markets of Europe. He went to Amsterdam and thence to London, arriving there December 18th, and making his headquarters at the Holborn Viaduct Hotel.

Born in New York in 1851, his first business experience was as employee in the house of P. & B. Lawrence, stationers. About 1880 he entered the old jewelry house of Baldwin, Sexton & Peterson, Broadway and Fourth Street, New York, as bookkeeper. It was not many years before he exhibited much aptitude as a salesman, and in consequence became a traveling representative for the firm. A year after the dissolution of the firm, he formed a partnership with R. N. Peterson, of the late firm, who had started in business for himself at 189 Broadway. Mr. Royce in the mean time had been a salesman for E. Aug. Neresheimer & Co.

The deceased had an extensive acquaintance with the western trade. He was a man in whom generosity predominated, and his cheerful and happy disposition secured for him friends in every direction. He was a man of refined tastes, and much given to literature. He leaves three sons, his wife having died several years ago. His funeral took place from his late home at Englewood, N. J., on January 28th.

J. B. LAURENCOT.

J. B Laurencot, importer of optical goods, of 33 Maiden Lane, died at Hamilton, Bermuda, on the 22d of January. His remains were brought to New York by the steamer *Orinoco* and interred in the family plot in Hoboken, N J.

Mr. Laurencot was born sixty-three years ago in the province of Lorraine, then in France. In early life he became an employee of Albert Berger & Co., and was by them sent to establish a branch house in London, England. Thence he came to New York in 1854 and took the management of the New York branch of the same house, in which position he continued until 1869, when he entered into business on his own account, in which his good mercantile habits brought him abundant success. Several years ago he established a branch house of his own in Paris, which is now under the management of his son E. W. Laurencot, and which has also been very successful. The deceased leaves a widow with seven children, two sons and five daughters.

C. ROBERT LINKE.

Robert Linke, of Providence, died Jan. 4th. He was born in Sittau, Germany, about sixty years ago, and received a good education. He became a proficient horologist and afterward royal watchmaker. Nearly thirty years ago he came to America and located in Providence. He later bought out Daniel T. Goodhue. About eight years ago Mr. Linke was relieved by burglars of nearly everything of value in his store, and twice since then has been the victim of burglaries. Last spring he failed in business.

It is said that Mr. Linke was once offered the position of watchmaker to the Emperor of China, and declined the position because he feared that his head might be taken off for an error in his workmanship.

Annual Meeting of the N. Y. Jewelers' Board of Trade.

E. J. SCOFIELD, THE NEW PRESIDENT.

THE N. Y. Jewelers' Board of Trade held their annual meeting at their rooms 41 Maiden Lane, on the afternoon of Jan. 30. About fifty members were present. President Stern declined the honor of a re-election as president. The list of officers elected was as follows :

President—E. J. Scofield ; First Vice-President—Leopold Stern ; Second Vice-President—Gurdon W. Hull ; Treasurer—David Keller ; Secretary and Assistant Treasurer—Herbert M. Condit. Trustees—Samuel Aufhauser, George E. Fahys, John C. Downing, Gurdon W. Hull, David Keller, Max J. Lissauer, S. F. Myers, August Oppenheimer, Frank H. Richardson, E. J. Scofield, Horace D. Sherrill, J. E. Spencer, Leopold Stern.

The Secretary's report stated that on Jan. 1st the Board numbered 89 members, while Jan. 1, 1890, showed 114, an increase of about 30 per cent. ; that during the year the Board had 140 failures in charge and settled 39 ; and that they have 8,852 concerns that they can intelligently report upon. The convention was adjourned to meet again on February 4th.

At a meeting of the Board of Directors in the morning of the same day the following were admitted as new members : Nelson H. Brown, Boston, Mass.; The Rogers & Hamilton Co., Waterbury, Conn.; Fidelity Watch Case Co., N. Y. City ; Illinois Watch Co., N. Y. City ; James R. Feeley, Providence, R. I.; L. Bauman Jewelry Co., St. Louis, Mo.; Goddard, Hill & Co., Pittsburgh, Pa.; H. F. Hahn & Co., Chicago, Ill.; Henry Cowan, Boston, Mass ; E. A. Whitney, Boston, Mass.



WIT, WISDOM AND WINE.

First Annual Banquet of the New York Jewelers' Board of Trade.

IN THE brilliant hall of Delmonico's on Wednesday evening January 22, there assembled a large body of intelligent and well-to-do business men. Diamonds sparkled from the shirt fronts and gleamed on the fingers of the majority of those present, the brilliancy of the banquet hall showing these adornments to full advantage. The occasion was the first annual banquet of the New York Jewelers' Board of Trade. After a general handshaking the guests took their seats around the seven long tables in the hall shortly after seven o'clock. The tables were arranged in excellent taste, and there was less profusion of decorations about the walls, nor was there the abundance of ferns and tropical plants about the hall, as frequently appears on the occasion of many Delmonico banquets. The American flag, entwined and gathered here and there and the green of tropical palms distributed about, furnished the only decorations, other than those which appeared on the tables. On the guest table there were two big punch bowls, and on the other tables were candelabra, ewers and epergnes which drew forth the admiration of those present. Music from the gallery, which entertained the assemblage during the course of the dinner, was rendered by the Hungarian band. During the evening the melody of the Liederkranz quartet served to pleasantly interrupt the speechmaking, and every time the members of the quartet sang they were vigorously applauded.

Great exertions had been made by the reception committee consisting of Horace D. Sherrill, Chairman, Samuel H. Levy, M. D. Rothschild, J. C. Downing, S. F. Myers, Gurdon W. Hull, Charles J. Fox, Wm. Bardel, David Keller, S. C. Howard, David Untermeyer, W. J. Leavenworth, Alfred Frank, C. W. Harmon, August Oppenheimer and Edmund J. Scofield to make the affair a complete success, and the congratulations that came from all sides proved beyond question that their object had been attained. The freedom that prevailed and the careful manner in which every detail had been planned left nothing to be desired.

Upon the dais were the speakers of the evening, arranged on either side of President Leopold Stern, and there names are given herewith in the order in which they sat, from left to right: A Herman, J. Armoy Knox, of *Texas Siftings*, W. P. St. John, Joseph Fahys, the President, L. Stern, Rev. A. J. Palmer, D.D., G. Carlton Comstock, counsel for the Board of Trade, Hon. J. R. Fellows, Hiram Howard, of Providence, Aug. Kurtzeborn, of St. Louis, and M. D. Rothschild.

Among those present at the banquet were the following:

Jos. Fahys, President of Fahys' Watch Case Co., and ex-president of the New York Jewelers' Board of Trade; Hiram Howard, Director Providence Board of Trade; August Kurtzeborn, President St. Louis Board of Trade; A. Herman, President Cincinnati Jewelers' Association; J. Armoy Knox, of *Texas Siftings;* Hon. J. R Fellows, Wm. P. St. John, President of the Mercantile Bank; Geo. Carlton Comstock, attorney for New York Jewelers' Board of Trade; Rev. A. J. Palmer, D. D., H. F. Hahn, President National Jobbers' Association; Gilbert T. Woglom, President Jewelers' and Tradesmen's Co.; T. M. Avery, President Elgin National Watch Co.; Jacob Bunn. Jr., of the Illinois Watch Co.; L. A. Parsons, President Brooklyn Watch Case Co.; A. M. Crommelin, President Crescent Watch Case Co.; Appleton Smith, of the American Waltham Watch Co.; David Untermeyer, President of the Atlantic Watch Case Co.; A. Schwitter, President Fidelity Watch Case Co.; A. G. Schwab, of A. G. Schwab & Bro., Cincinnati; M. A. Myers, of S. F. Myers & Co.; A. L. Strasburger, of L. Strasburger & Co.; S. Blumaur, of S. F. Myers & Co.; E. S. Johnson, Jr., of E. S. Johnson & Co.; J. Adler, of L. Adler & Co.; Byron L. Strasburger, L. Adler, W. J. Leavenworth, of R. Wallace & Sons' Mfg. Co., Wallingford, Conn.; F. E. Parsons, M. J. Lissauer, of Lissauer & Sondheim; Henry Dreyfus, Benj. Allen, of Benj. Allen & Co., Chicago; L. W. Flershem, of Lapp & Flershem, Chicago; S. Muhr, of H. Muhr's Sons, Philadelphia; Irving Smith, of Morrill Bros. & Co., Boston; M. Bauman, of the Bauman Jewelry Co., St. Louis; Geo. H. Richards, Jr., of Geo. H. Richards, Jr,, & Co., Boston; Otto Heeren, of Heeren Bros. & Co., Pittsburgh; Gurdon W. Hull, manager of Simpson, Hall, Miller & Co.; J. G. Bacon, manager Meriden Britannia Co.; W. B. Musser, of Bowman & Musser, Lancaster, Pa ; S. F. Myers, of S. F. Myers & Co.; E. J. Scofield, of Elgin National Watch Co.; Horace D. Sherrill, of Sinnock & Sherrill; David Keller, of Pforzheimer, Keller & Co.; C. J. Fox, of M. Fox & Co.; John C. Downing, of Downing, Keller & Co.; D. C. Percival, of D. C. Percival & Co., of Boston; H. G. Patterson, of Smith & Patterson, Boston; A. T. Sylvester, of H. T. Spear & Co., Boston; Andrew Paul, of A. Paul & Co,, Boston; E. A. Whitney, of Whitney Bros., Boston; E. S. Hyman, of Hyman, Berg & Co., Chicago; F. L, Smith, C. L. White, Julius A. Lebkuecher, of Krementz & Co.; G. W. Hutchison, of Hutchison & Huestis; S. C. Howard, of Howard & Son, Providence; S. Aufhauser, Henry Ginnel, A. C. Smith, A. Webster, Louis Sondheim, S. Lissauer, E. Loesser, S. Englander, Jas. H, Noyes, H. K. Dyer, J. C. Mount, D. F. S. Forshay, E. Untermeyer, S. Blackinton, L. W. Flershem, John M. Cutter, J. B. Bowden, Geo. E. Fahys, H. H. Butts, Geo. H. Goddard, F. S. Sherry, L. Dreyfus, A. Peabody, Julius Koch, F. Goldsmith, Fred. Lewis, A. Oppenheimer, H. F. Veith, H. F. Cook, A. L. Brown, C. W. Harmon, H. C. Rowbotham, S. Kaiser, H. Muhr, Alfred Frank, H. Kaufman, G. F. Veith, Frank Welch, Fred. R. Simmons, A. E. Bentley, Isidor Stern, Aug. Goldsmith, E. Arnstein, L. Kahn, M. Kahn, S. Levy, Wm. Bardel, C. A. Boynton, Geo. Parks, S. Avery, P. K. Hills, Jacob Strauss, E. K. Wright, F. Bien, W. S. Sparrow, Henry Kohn, Wm. L. Sexton, Geo. W. Washburn, R. A. Kettle, J. E. Spencer, H. V. Cramer, W. H. Atwater, S. Wallach, David Kaiser, Wm. R. Alling, Chas. F. Morrill, E. A. Eisele, E. B. Floyd, of Floyd, Pratt & Rounds, of Boston; L. J. Mulford, Chas. R. Junge, Robert H. Stahl, G. L. Fox, J. M. Metcalf, Sig. M. Schiely, A. Schwob, Edward Moody. A. Plaut, Robert C. Livingstone, David H. Smith, Herbert M. Condit, Secretary of the Board; J. W. Miles, C. N. Fogg, H. M. Carle, J, L. Shepherd, J. T. Scott, Stephen Albro, A. R. Funck, S. Lindenborn, C. E. Mott, A. Keller, J. Kammerer, J. Graff, A. J. Kapp, C. H. Knights, of C. H. Knights & Co., Chicago; H. H. White, C. G. Rathgen, J. V. Burkeman, Franklin Day, S. H. Levy, Louis W. Levy, L. Gutman, J. H. Johnston, F. A. Frey, T. G. Calvert, H. H. Thornton.

The following are the officers of the New York Jewelers' Board of Trade: Leopold Stern, President; Gurdon W. Hull, First Vice-

President; Edmund J. Scofield, Second Vice-President; David Keller, Treasurer; Herbert M. Condit, Secretary and Assistant Treasurer.

The directors are as follows: Samuel Aufhauser, Wm. Bardel, John C. Downing, Gurdon W. Hull, David Keller, Max J. Lissauer, S. F. Myers, August Oppenheimer, Frank H. Richardson, Edmund J. Scofield, Horace D. Sherrill, David N. Smith, Leopold Stern

The banquet committee did their work well and deserve the thanks of the association. The following composed the committee: M. D. Rothschild, Chairman; J. C. Downing, S. F. Myers, Chas. J. Fox, Edmund J. Scofield, Horace D. Sherrill, David Keller.

The menu contained all that could be desired by the most fastidious epicure. The following is a verbatim copy of it:

Menu.

Oysters

SOUPS
Broth, Imperial
Brisque of Lobster

SIDE DISH
Patties, Columbian fashion.

FISH
Aiguillettes of Bass, Royal style.
Potatoes, Duchess

REMOVE
Fillet of Beef, Matignon
Spinich, relouté

ENTREES
Capon with chestnuts
Peas, Parisian fashion
Sweet bread in case, Duxelle
String beans

Sherbet, Régence.

ROAST
Red head Ducks

COLD
Pate of Foies gras, jelly
Lettuce salad

SWEETS.
Peaches, Richelieu
Maledoine jelly Wafiles, Cream
Pyramids
Fancy Ice Creams
Fruit Assorted Cakes Coffee

WINES
Graves Sherry Pontet Canet
Champagne Macon Vieux Liquors
Apollinaris.

After the coffee had been served and the cigars passed, Mr. David Keller, toast-master, rapped the assembly to order and said:

Gentlemen of the New York Jewelers' Board of Trade:

I have the honor to introduce to you the President of the New York Jewelers' Board of Trade, Mr. Leopold Stern.

Mr. Stern spoke as follows:

ADDRESS OF MR. LEOPOLD STERN.

Gentlemen of the New York Jewelers' Board of Trade:

In glancing over the pages of this artistic order of exercises, I am reminded of the fact that the time has arrived when, in my position as President of the New York Jewelers' Board of Trade, I have the extreme pleasure of extending to our friends and guests a most hearty and thrice cordial welcome to our first reunion. I feel proud, and the association is highly honored to behold in our midst the faces of so many representative men in our trade, as well as citizens of fame from this and neighboring cities. They have come here to-night to meet us and to join us in the celebration of an event which, I trust, will ever be cherished as a most pleasant and memorable epoch in the history of our organization. We have assembled here for the purpose of commemorating in a proper manner the fifth anniversary of this board's existence. We have come together to have a jolly time—to ratify and strengthen the ties of mutual friendship, and to revive some of the pleasant recollections associated with our organization. We have endeavored, and, I trust, we have succeeded in our effort to demonstrate clearly to our friends, and particularly to the representatives of sister associations, during the past three hours, while we have heen sitting at these tables, that in our various cares of life we all combine upon one great point, and that is, to dine (laughter); hence, I submit that the theory advanced by some pessimists about our organization as not having reached absolute perfection—that theory is flatly contradicted if the work performed here during the earlier part of the evening with such perfect harmony and absolute unanimity is for one minute taken into consideration.

As there are many with us this evening who are not conversant with the history of our organization, I will endeavor to give you a brief review of some of its events.

It was in the month of January, 1885, when a number of our most prominent firms in the trade, as by inspiration, recognized the necessity and feasibility of forming an association which should have for its chief purpose co-operation of its members to protect and promote their mutual and combined interests. The first meeting was called to order at the office of our friend, Joseph Fahys, which was largely attended by representatives of our most enterprising houses; views were freely exchanged, and after careful deliberations, which consumed the greater part of the day, it was unanimously resolved to organize. The preliminaries were arranged, and a short time thereafter a convention, composed of manufacturers, importers and wholesale dealers connected with the jewelry trade, was held, and at that meeting we had the extreme gratification of enrolling upon our list of membership the names of over sixty such firms, which gave at once a strong impetus to our organization, and put us on the road to success. At that meeting we elected our first president, Mr. Joseph Fahys, [applause], and in thus honoring him we honored ourselves. And I might as well state at this juncture, feeling confident of expressing the sentiments of our entire membership, that our present strength and prosperity is due in a great measure to the zealous and indefatigable efforts of our first standard bearer, Joseph Fahys.

Most of you remember but too vividly the trials and tribulations with which we were confronted during the first year of our existence. Deep indeed did we drink from the waters of Marah in our endeavor to enlarge into a literary enterprise, which, however, soon collapsed into a sort of a fiasco, and for which high minded ambition we were obliged to put our hands deep into our pockets. Some of our timid directors were even arranging their toilets preparatory to adjourning to a famous town situated on the shores of the beautiful Hudson. As jewelers are, however, by nature diplomats, we succeeded by the practical diplomacy of some of our directors soon in being extricated from the predicament into which we had so inadvertently fallen. And once more we passed from under the shadows of cedar up into the bright light of safety, and, like the young forest tree bent with many storms, and which in old age braves the blasting winds, like them did we prosper in adversity. Our darkest hours have been our nourishment and drink. They enriched our marrow, expanded our strength.

After two years of service, the name of Mr. Fahys, upon his own urgent request, was placed upon the list of our retired officers, and the reign passed into the hands of our esteemed friend, Frank H. Richardson, who, I regret to say, we have not with us this evening.

Mr. Richardson, with his cautious methods and wide acquaintance and experience, soon proved that we had the right man in the right place. After serving two years in the capacity spoken of, Mr. Richardson, with his Washingtonian principles, declined the acceptance of a third term, and the command was transferred to our poor, lamented friend, William Smith, a man well known and beloved throughout the jewelry trade of the United States, from Maine to California. But, alas, it was decreed by an Almighty Providence that his term of office should be of short duration, as, on the third day of May last, an untimely death snatched him from our midst, to the deep sorrow of his many friends. May his memory ever live with us.

This, gentlemen, brings us to about the present period of our existence, and now that we are elevated on a plateau of strength and prosperity, let us look back to our first struggles, not with regret but with gratitude, for it has left us stronger and wiser. Where is the association whose pillars are upheld by such Sampsons in the trade as our Board of Trade can justly boast of? Where is the association wherein more enterprise, brain and capital preponderates than is in our association? Show me the association whose members are the recipients of greater benefits and advantages than those which are dispensed from our Board of Trade, and where the benefits emanate and result from such unselfish, disinterested, and even self-sacrificing motives as are inculcated and promoted by the elementary principles of our organization? You will fail in your efforts to find it. Is it a wonder then that we receive appreciation not alone from our own city, but firms from sister towns, recognizing the strength, the prosperity, the influence, the integrity and character of our association have been led to ask for admission into our ranks? Everywhere encomiums pour into our willing ears and sweeten struggle. Are we not rich in stimulus when a fleeting glance can conjure up so many signs of prosperity?

Gentlemen, I feel proud to address you in the capacity of your president. I feel proud of our achievements, of our progress, of our condition in general. But pride must not be permitted to eat its way into modest habits. But for the extreme satisfaction it gives me to rehearse our successes, I should not have inflicted upon you these lengthy remarks. Let now the crystallized rhetoric of our distinguished friends and orators, whom we have with us, enrich us, and, like the light thrown up on molten silver, flash back pictures of beauty. When we leave here to-night may we feel that we have had a feast of reason, and when the soft eloquence of the reverend gentleman on my left pours fourth, and when we hear from the other excellent speakers on either side of me, who will not be a silent listener? [Applause.]

Gentlemen, the first toast which I take great pleasure in proposing is one that appeals to our true American spirit, our patriotism, our pride and honor for this great and glorious country. I ask you to rise and drink to the health and long life of

"The President of the United States:
May he guide the ship of state o'er the sapphire sea
of peace to the golden haven: Prosperity."

After the toast was drunk, the President continued:

Gentlemen, Mr. David Keller will act in my behalf as toastmaster for this evening, and you will kindly pay close attention to him, because he will have a great deal to tell you that will interest you.

Mr. Keller—This is a conspiracy against one of your fellow citizens, and that is me. This is the only way you know how to keep me quiet, consequently you put me here. [Laughter.]

The first speech of the evening will be a song, and I have the honor to introduce to you the Quartette of the Liederkranz, who will sing the beautiful song, "Health to the Fairest."

The excellent manner in which this quartette entertained the audience led to a call for an encore, which was courteously given.

Mr. Keller continued:

Gentlemen, our President will read now a few letters that we have received in reply to our invitations from gentlemen who were prevented from attending the banquet.

Letters of regret were then read by Mr. Stern from the President of the United States, ex-President Grover Cleveland, [repeated cheers were given when Cleveland's name was read], Hugh J. Grant, Mayor of New York City; David B. Hill, Governor of New York State; the Secretary of the Treasury, Collector of the Port of New York, the Mayor of the City of Brooklyn, the Manufacturing Jewelers' Board of Trade, of Providence; F. S. Douglas, and the President of the Chicago Jewelers' Association. The letter from Providence stated that in the enforced and unavoidable absence of the President of that Association from attending the banquet, the Hon. Hiram Howard, of Providence, would represent the Manufacturers' Board of Trade on this occasion. The letter from the Chicago

Association also expressed warm sisterly feelings for the continued prosperity of the New York Association.

Mr, Keller—Gentlemen, I hope we wont have any more regrets besides what I have now to state. The second toast upon our list is to The Empire State, and I regret to say that the gentleman who was to respond cannot appear. He has written : "My dear Mr. Scofield, upon arriving home this evening I find illness in my family, which will make it impossible for me to attend. My father has had a severe stroke of paralysis. I regret very much that the circumstances above stated will prevent my attending what to me would have been a very enjoyable evening. Thanking you for the compliment you pay me, I am, very truly yours, James W. Ridgway."

In the meantime, our great State, having no one to answer for it, will have to live on its prestige.

"An empire in herself both broad and great,
Honored within our land to be a State."

But while we have to regret the absence of the speaker for this toast, I know that we will be repaid doubly by the next speaker.

Our next toast is "Our Metropolis," and we have a gentleman in our midst who, when I mention his name, will be recognized as synonymous with all eloquence. Col. Fellows has honored us with his presence, and will answer to the toast of

"Our Metropolis :
Beloved city, full of courage rare,
Remember to the brave belongs the Fair."

I have the honor to introduce to you Col. John R. Fellows. Col. Fellows spoke as follows :

ADDRESS OF HON. JOHN R. FELLOWS.

Mr. President and Gentlemen of the New York Jewelers' Board of Trade:—When I reached your hall this evening I contemplated little more than an ability to acknowledge your courtesy and thank you for the honor you had done in giving me a place at your board. That relentless foe of our public for the past five or six weeks has made me one of its victims, and among all the vices to which we in New York are addicted I have found no vice so firm and controlling as that of this "grippe." It is with extreme difficulty that I speak at all, for I have suffered from a bronchial attack for some weeks, which renders it not only painful but hazardous to address you. But, as our brother accross the river has failed to be present to-night, and the State has nobody to represent it here to-night, I feel like trespassing upon your time for a very few moments to say some words responsive to the toast of our "Fair" city, soon, we trust, to be the World's Fair city. [Applause.] I don't know that I should venture at all upon the theme were it not for the fact disclosed in the reading of the letters of regret by the chairman that one of the officers of this association required to be informed of the names of the public officers of this city, and it is as largely with the purpose of imparting that information as for any other reason that I rise to my feet. (Laughter.) [Col. Fellows referred to a slip of the tongue made by the President, who, in reading Mayor Grant's letter of regret, accidently said "U. S. Grant" instead of "Hugh J. Grant," which produced more or less merriment.

There is a'ways something in the thought of a great city that impresses one with a feeling of awe and solemnity. I imagine it is something more than a mere aggregation of individuals that makes up this city. It is not the huddling together of a certain number of persons that constitutes a city. It implies vastly more than the mere recital of numbers for the real city to epitomize the world. Within its streets in each moon we may discover every phase and each influence that guides and controls mankind in every part of the earth. It is a representation of association. It calls together not only all creeds, and tongues, and kindreds, but it confuses them in a mass and a community that is promotive of larger results and greater attributions—assists humanity more than the efforts of a like number of individuals multiplied tenfold together, separated as units and each active for himself. What is it that makes this association of yours powerful? What is it, Mr. President, that gives it that force, that vigorous, that cogent power which you have spoken of to-night? What is it but this touch of thought with thought, of brain with brain, this attrition of man with his ability to crowd together conflicting interests ; this clash of ambition ; this constant strife which we have with nature for place and supremacy? What is it but this interpretation of the characteristics of a city that imparts vitality to an association like yours? The hurrying crowds that go through our streets are impelled by something more than mere desire to acquire dollars and cents. We meet that inducement everywhere, but here there is something higher and more engrossing and controlling. The man who comes here finds out at once that upon every hand there are competitors bristling with power, full of adventure, desirous of mounting to the higher rounds of the ladder, and he speedily realizes that if he is to attain any success in life it must be a constant struggle—a grapple of intellect with intellect, a clash of thought, a struggle of flint against steel, in order that the true fire may be discerned. All this goes to make up a great city. I marvel every day—and I have been a long time a resident of this city—I marvel every day as I go through its streets and see its hurrying crowds. As I walk into its crowded centres I wonder how it is that all this hurrying mass can secure a living within this narrow space, until I remember that the working power, the mercantile skill, the administrative ability, the qualities which make a successful business man, have so exerted and multiplied themselves here that they have made all the earth contributors to this island, and every part of the habitable globe is now sending here its products to lay in the lap of this fair city. Its merchants have pervaded every part of the globe. Its enterprise has not permitted itself to be circumscribed or limited.

It was but a few years ago, upon the banks of the Mississippi river, that I beheld one lurid morning, when the earth was soaked with blood and the skies showed war, I beheld a stately ship of the American navy, fired by the guns of the enemy, deserted by its crew and officers, slowly floating down that river. As the fire reached gun after gun upon its broadsides, they discharged themselves until the fire touched her magazine, and with one great roar she went down into the abyss, and I remember, turning from that scene for a time, when that ship, the Mississippi, fitted and inspired by the enterprise of the New York merchants, with the broad pennant of Commodore Perry flying at her head, for the first time went out from these shores to breathe our civilization into oriental lands, went among eastern and hitherto comparatively unknown portions of the world, to take the initiative steps to bring the products of those lands here. Her's was the peaceful and pleasant mission. Far over the water of the broad Atlantic and Indian seas she made her way until she found the land where cocoas grow, but around whose shores superstition had erected barriers. Yet her prow boldly pointed through the eastern climes. She penetrated yonder distant shores, and unveiled the mysteries of those lands. It was not the mere dream of an enthusiast that impelled that conquest. For presently we beheld the result in our midst. Ambassadors from those lands for the first time walked your streets, and the wealth of that land came to this new world, and from that day unto this one, by our peace, we have made a customer of the orient, and the influence which broke down walls and overcame the superstitions and traditions of these people—these influences are combined in this great city of commerce. You are a part of the mercantile honor and pride of this metropolis. There is much yet to be accomplished, and we are by no means a perfect city. We recognize our faults, and day by day and year by year, with patient carriage and honest effort, are laboring to overcome them. Already, we are the pride of the whole republic. (Applause.) There is no citizen in any part of this broad land, whatever may be his local attachments, who does not feel that New York city is an honor to the nation, and he is proud to recognize it. The fame of our charities has gone into every part of the earth. If fire shall desolate a sister city, if pestilence and famine and the scourage that walketh at noonday shall waste the land of those who were recently the foes of the republic, with the same generosity that New York leaps to the accomplishment of her high commercial purposes does she extend help to those in misfortune. Broad and munificent have been her charities. True, there is much of vice in our midst. We have a large criminal class here. First, because there is a large individual freedom, and every criminal who is under the surveillance of foreign governments, if he succeeds in making his escape, naturally gravitates to the most popular city of the new world. Then, too, we receive criminals from other cities of this republic. It seems to me for the reason, in a great many instances, that such is the pride that is felt in our metropolis, people elsewhere would rather be criminals in New York than honest men anywhere else. (Laughter.)

And yet I believe I may fairly challenge upon the basis of statistics—I may fairly challenge an investigation with other localities in this respect. The percentage of crime to population in the City of New York is less than in any other large city on the earth. (Applause.) Organized crime has ceased to exist among us, except rarely. True, sporadic cases of it are yet occurring in the jewelers' trade. (Laughter.) But I am serious in this statement. A few years ago, all of you gentlemen who have reached thirty or thirty-five years of age well know, our banks, our safety institutions were largely at the mercy of an organized band of burglars more skillful than the world has ever known. The gigantic robberies which took place here startled the whole world. Hundreds of thousands of dollars were frequently taken, and there were a number of robberies whereby millions of dollars were taken in the aggregate from institutions and firms. Forgeries were of common occurrence. We knew that we had located in our midst a band of accomplished men who were devoting all their knowledge and astuteness to the perpetration of crime. The robbery of government securities from various offices was a thing of almost weekly occurrence. To-day there is none of that organized professional crime existing in New York, and nearly all the crime, except that to which I shall soon refer, that we have now in the city may fairly be attributed to the presence here of a great mass of men from the Orient and Southern portions of Europe, who are accustomed to little restraint at home, fostered under warm skies, who have been addicted to quickly resent what they fancy to be insults. and if you will look at the list reported from day to day you will see that nine-tenths of the crimes relate to violence of person, except in the jewelers' association.

You have, Mr. President, I regret to say, a class in your midst who frequently abuse your generous trust and confidence, whom you make your messengers, your agents and your missionaries, who take your resources and your property, and, going away, appropriate them to their own use. I call this to the attention of the Jewelers' League of the City of New York, for I believe they may adopt measures in breaking up this evil. Firm after firm of this city has come to me with the same story of agents they have sent out with samples of goods, appropriating them when they reached other States, or using checks that they ought not to have. I have not time in my busy office hours to listen carefully to all these stories. I have sent them to the grand juries; indictments after indictments have been found and when we came to investigate the local phases, we found that in almost every instance these crimes are committed in another State. The wrong is done in another State, and if you would see that agents are employed whose duty it would be to go to those States, put the cases before the grand juries there, obtain the necessary requisitions, bring these men here and punish them severely in four or five instances, you would succeed in breaking up the great evil which has caused you a great many thousand dollars a year.

Well, what more shall I say of our city? We are going to have Chicago here in a couple of years, and St. Louis (looking at the St. Louis and Chicago guests), and all the world here. They must recognize that there is but one spot on all this continent where the resources of the continent can most properly be displayed, to which the world will most willingly come, where its capital, its vigor, its enterprise, its brain, to as great a degree in any part of the earth is found, and when they come we trust that New York will be a city in all its physical and material aspects better than it is to-day. We should have better paved streets. Men will then be able to look at the lights at night time without fear of death, and go along the highways to and from their homes in the peace and security of law. We shall welcome them all with an old-fashioned, generous, hearty New York welcome. If they want good food, generous treatment, kind association, we will give it to them. If they want material aid, we will cheerfully render it. We like these suburban towns. (Laughter.) They are necessary to the growth of the Republic. They are a part of our common grandeur and glory. In time they will grow to places that will become conspicuous in the history of the country for something else than for burning up or furnishing a place for national conventions. In time they will be cities in the true sense of the word. But there never will be but one New York—the imperial pride of the whole nation, as she is the pride of her citizens. (Applause.) To such a city we invite the world. Show by the character of your association—show by these aggregations of your business industries—show by the accomplishments of the commercial city of our people that we are worthy

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the fame we have acquired, and that we can easily bear the honors that in 1892 are to be willingly imposed upon us.

You will permit me a single observation more. There is something more to be gained in this world than its material results. My friend, the preacher, and myself have been conversing about it to-night—during all this evening when I was not engaged in attempting to convince him that mixing his drinks was dangerous to his theology, and that if he would persist in associating dry monopoles with the cordial that came after, his creed was likely to get mixed. We have been talking about the social side of our nature. You have been holding business meetings of the associations of the country here this week, and have ended with this social gathering. There is a social side to our life, and you could not have more gracefully rounded up your business interests than by coming together in this social way to-night. After all, I think the old saying that shrouds have no pockets is essentially true, and all that we gain here will be left here, realizing the witticism of one of the brightest sprits of New York, who died but a year or two ago, and whose name, if I would mention it, would be familiar to you all. When a very rich man in this city died, there arose one night a controversy in a prominent club in this city as to how much he had left, and this gentleman, whose wit I have referred to, suddenly intruding himself upon the circle discussing the subject, was asked, "How much did So-and-So leave?" The wit replied: "Er, how much —er—did he—er—leave? Why, damn it, he—er—left everything." Remembering this, I say it is just as well to take with us out of this world what we can carry —the recollection of good deeds while we live here—generous words spoken—of hands stretched out to help the suffering of others—of drops of wine, pure and nourishing, poured into the cups of some life that otherwise would only have drunk bitter dregs. It is well for us as we go along to strew some flowers in the pathway of others. If we remember that this social communion brings us into closer assimilation with the true idea of manhood, separates us from care, relieves us from the burden of life and pours a flood of sunshine among us, then we shall have learned the best lesson in life, and it is well that in a broad, catholic, generous and tolerant city like New York that lesson should be constantly impressed—that we are coming more and more to the observance of holidays. I want to express as my opinion the idea that Mr. Edward Bellamy's conception of the government, of the condition in which men should work only for the purpose of giving a certain contribution to a central power to have it re-distributed back as they need, is not right. The strongest in this life is bound to get nearest to the top. But the true lesson of humanity is to teach the weaker ones how better to climb the ladder, showing them that there is plenty of room at the top. Individual exertion, the effort of unity is, after all, the necessary thing.

I thank you, Mr. Chairman and gentlemen, for the privilege you have given me of being here. I regret that you did not confine me to the toast that some days ago you had selected for me to respond to, "The Bar and Judiciary," because I had prepared myself for a most brilliant speech. I was left entirely without resources when I to-day was informed that somebody else wanted that toast and I must take up with the best I could get. (Laughter and applause; three cheers were given for Col. Fellows when he took his seat).

Mr. Keller: Gentlemen, I hope that the commercial travelers that are among us have taken note of the speech of Col. Fellows, and I only regret that we have not the Collector of the Port with us, who might have given the importers a lesson.

The next on our programme is the toast "The Jewelers' Art," and we have a gentleman in our midst who has been fitly selected to answer that toast.

"The Jewelers' Art:
Th ough earth's internal chaos thy devotees have sought,
And from its darkest caverns the goddess Beauty brought."

The Rev. Dr. Palmer will answer to this toast.

Dr. Palmer spoke as follows:

ADDRESS OF THE REV. A. J. PALMER, D. D.

Mr. President and Gentlemen of the New York Jewelers' Board of Trade:—I thank you for your courtesy to be your guest this evening, and for the custom you have instituted by inviting a clergyman at your first annual banquet to speak to you. I do not know any reason why I should have this toast, unless it be because of the fallacy which is always in the lay mind, namely: that ministers are the only people in the world who can talk intelligently upon a subject about which they know nothing, because that is the way they earn a living. Now, I propose to demonstrate to you by not talking much upon a subject about which I know nothing, that I am an exception to the stock clergyman. I want to explain a little piece of personal information while I am in this position. I am a Methodist preacher, and I feel lonesome here to-night. And, moreover, I happen to be what is called in our ecclesiastical terms, a presiding elder in my district, and it is my business to enforce the discipline. The Methodist rule is against the putting on of gold and costly apparel, and it is my duty to see that that rule is enforced. Therefore, it would appear that I am not the kind of man that jewelers like, for the literal enforcement of such a rule would interfere with their business. Whether there has come a change over the Methodists I do not know; but I must confess it is a long time since I have heard one of our preachers refuse a gold watch offered him by his congregation. (Laughter.) Indeed, I know one of our older ministers, a most venerable gentleman, who was reading the general rule one day, as preachers are always required to do annually, who said, coming to the rule I have just referred to: "My brethren, I do not know exactly what that means. I always wear the best clothes I have, and I hope you do the same." Perhaps a liberal interpretation of this precept would govern the spiritual rather than bodily apparel. Broad-mindedness does not consist in what one wears, but in the spirit that is in his own heart.

Now, gentlemen, about this toast. I know nothing about it, therefore I say litttle. I have been asking myself to-night what effect the art has upon the people about us. I was considering how rarely you have a great defalcation in your trade, when Col. Fellows wickedly referred to crimes in your business, in which I am sure he must be wrong. We hear more of one man who goes wrong in this world than we do of the hundred honest men who live a correct life from day to day, and from year to year. Whether it is because your business familiarizes you with great values—whatever may be the cause—the effect is undeniable that you are as a class a very honorable and polite lot of men, indeed. And you produce out of a thing of littte or no value great value. Somebody told me once that a bar of iron that was worth $5 could be made into horseshoes that were worth $10, into needles that were worth $350; into penknife blades that were worth $3,000, and into the balance springs of watches that were worth $250,000. Now, I propose to say that if you get that for your labor, it is worth what you get for it.

Perhaps you do some harm in your business when you promote vanity by the artistic decorations that are produced. I can think of a great deal of good, however, that you do the ladies. You are the best friends that the ladies have. You have helped a great many men to get a great many jewels of women by adornments of their persons which have served to make them attractive. There are various reasons why women do not get married—sometime because they are homely, and sometimes because they make mistakes. Up in Yonkers, with which locality I am familiar, several have been known to make mistakes. In Yonkers, a great many years ago, a widow jilted George Washington, and married a tavern-keeper. Gentlemen, you adorn women and make them sparkle in the eyes of men. I am not quite certain, but the fortunate plaintiffs in our recent court cases may have got large damages largely on account of certain things that they have done for their persons in the times when the foolish millionaires were fond of them.

I hope as an association, in so far as your methods are upright, and you believe in well-doing among yourselves and with the world at large, that you will bear in mind that wisdom is better than rubies, because it lasts longer. As our friend, Col. Fellows, reminded you, it will not be long before you will have to leave all the jewels that you have, except that inward jewel of character, which you shall carry with you on that last voyage across the great ocean from which mankind does not return. That character is like a pearl. The precious pearl, you know, is formed by the drifting of a grain of sand into the open oyster. There oozes out of the oyster, when the sand is deposited between its bivalves, a substance which surrounds the little grain, and the combination eventually becomes a pearl, valued by men for its beauty. And so, out of the contentions of strife, and out of the self-denials, and out of the good that you do to others, grows up that something within you which you may call the pearl of character, and which is the one thing that lasts when the pocketless shroud is yours. There has been a remarkable coincidence in the art of literature which I desire to call your attention to in this connection. Perhaps it has not been recalled to you, for it is of very recent date indeed. The two most venerable and most honored poets that speak the English tongue, each in extreme old age, have composed a poem and struck a song in the same key. Both are in the ninth decade of their lives; one the greatest living American, and the other the greatest living English poet of his time. Whittier, at eighty-three, fancies himself an old man going out upon that ocean which I referred to. Tennyson, in his answering song, entitled: "Crossing the Bar," sings in similar strain.

Dr. Palmer closed his address by eloquently reciting two recent poems, one by Whittier and the other by Tennyson, conveying the sentiments of their yellow-leaved days and their beautiful thoughts of what lies before. His address was vigorously applauded. Whittier's words were recited by him as follows:

BURNING DRIFTWOOD.

I know the solemn monotone of waters calling unto me;
I know from whence the airs have blown that whisper of the eternal sea.

As low my fires of driftwood burn, I hear that sea's deep sound increase,
And fair in sunset light discern its mirage-lifted isles of peace.

And yonder (continued Dr. Palmer) from across the water comes an answering song from Tennyson at 81, entitled, "Crossing the Bar." It closes the last book of lyrics which he has published.

CROSSING THE BAR.

Sunset and evening star, and one clear call for me;
And may there be no moaning of the bar when I put out to sea.

But such a tide as moving seems a sleep, too full for sound and foam,
When that which draws from out the boundless deep, turns again home.

Twilight and evening falls, and after that the dark;
And may there be no sadness of farewell when I embark.

For though from out our bourne of time and place, the floods may bear me far.
I hope to see my Pilot face to face, when I have crossed the bar.

I want to say that the only pearl which you will will carry with you across the bar will be the inward pearl of character. May it be pure and priceless within us all, and every year when you may reassemble here, may this art also have made progress in you. Said an old man once: "I thank God that I am what I am. I thank God that what I once was I am not now; and I thank God that what I now am I shall not always be.

Mr. Keller: For the information of Dr. Palmer I will call to his attention, to our sorrow, that watch springs do not bring so much money as they formerly did. You can buy them cheaper; in fact, you can buy the whole watch cheaper.

The next on our programme is a toast which denotes a spirit of the times, that the world is no more apart in strife, for when I mention this sentiment it calls to mind and honors, as ourselves, those that are engaged in the similar cause, "Our Sister Boards," gentlemen who are engaged in the same purpose as we are, and we take this occasion to solicit remarks from them, and signify our well wishes to them. Brother Hiram Howard, from Providence, will answel to this toast, and after I pronounce the sentiment, I know

the gentleman will wax eloquent, and keep you spellbound for the next hour.

"Our Sister Boards :
Though boards we are, don't put us down as lumber ;
Nor are we sleepers, for we never slumber."

(Applause)

I have the honor to introduce to you the Hon. Hiram Howard.

Mr. Howard spoke as follows :

ADDRESS OF THE HON. HIRAM HOWARD

Mr. President and Gentlemen of the New York Jewelers' Board of Trade: It is with great timidity, which some of my friends in frout of me know is my distinguishing characteristic, that I rise to say the few words in response to this toast. The president of our board of trade—and I have the honor to belong to both the Providence and this eminent organization—our president was to have been here this evening ; but the letter of the secretary has explained why he is absent. I think, however, that a different selection might have been made to represent the Providence Board of Trade. It seems to me that from a State so small as Rhode Island to select a man weighing two hundred pounds to talk for so small a section is a waste of raw material. I do not see why a little fellow like Ralph Hamilton was not chosen. (Laughter)

It was told this evening an anecdote about a gentleman whom you all know, which occurred when he was in Cincinnati. He is a veteran, and on all occasions when the veterans parade in Providence he turns out on horseback in all his glory. He was in Cincinnati at the same time when the veterans were parading in that city. He was, naturally, asked to turn out, and replied to the invitation that he always went as a mounted officer, and was provided with a horse. When the time arrived he appeared on the scene, and to his surprise, found that there was assigned to him a small Shetland pony. He remonstrated against the size of the horse, saying: "You don't suppose I shall ride a horse like that?" They responded: "Why, the horse is as large as Rhode Island ; what do you want, the earth?" (Laughter.)

I believe that heretofore there has been a little friction between the Providence and New York Boards of Trade—a sort of disinclination to be brotherly and reciprocal. I have decided that the fault lies with the New York brothers, for the reason that we are very good people down East. I am always a good man when I am in Rhode Island. You have, some of you, heard of the little girl in Providence who was about to go to New York. This little girl was about to move to New York with her family, and she was saying her last prayer at her old home. She prayed : "Good-bye, God, I am going to New York." (Laughter.)

I suppose President Wilcox has sent me here to-night to show how magnanimous we Yankees are—to show you gentlemen that if you have treated us coldly we are willing to forgive you, and I am really sent here to hold out the olive branch of peace. I intended to have an olive branch with me, but in changing my business for my dress suit I forgot it. But seriously, gentlemen, I do not see why there should be any sort of friction between these two organizations. I think the very cordial invitation that you have given our presiding officer to be with us to-night shows tha you are willing to meet us half way. I believe that a system of communication and interchanging information between these two boards would result to our mutual advantage. For instance, our commercial reports are confined to the jobbing or wholesale trade, and yours are mostly among the retail houses. There could be a system of exchanging between the two boards that would be much to our mutual benefit. We have a most efficient secretary, and since our reorganization we are stronger than ever, and believe that if the directors of the two organizations would get together we could serve to strengthen both organizations. On my return, at the next meeting of the board of directors of my association, I can suggest this matter, and I hope the same will be done in your own board.

Gentlemen, I thank you very much for listening to the very few remarks that I have been able to make ; but I never will forgive my friend, the chairman, for springing this thing on me at this opportune hour. I have been suffering from the "grippe," too ; and while I have been scarcely fit for anything, I received a telegram saying that I must respond to this toast. Now, a short time ago, I thought that I was in imminent danger of being elected mayor of Providence ; but my Republican friends kindly interfered and I was not elected. (Laughter.) I wish that the chairman of your committee had treated me as well as the Republicans did.

I hope that at some time we can have a dinner in Providence, when we will invite you in turn to dine with us. (Applause.)

Mr. Keller : The next on our programme should be "The Bar and Judiciary," but Mr. Knox, who is to answer to "The Press," requests me to call upon him now, as he has to go home on account of sickness in his family. Therefore we will change our programme.

In 1848, I think it was General Scott who had a conversation with the Mexicans—a loud one it was. He went down there and took a sieve with him and began to sift, and sifted out Texas. We have a part of *Texas Siftings* with us, and he will respond to the following sentiment :

"The Press :
A marvelous power, and how grandly used
When its great privilege is not abused."

Mr. Knox rosponded as follows :

ADDRESS OF J. ARMOY KNOX.

Mr. President and Gentlemen of the New York Jewelers' Board of Trade:— I do not like the way I have been introduced at all. My friend here intimated that I intruded.

I don't know a thing about retailing and jobbing ; but I hope that when I go away from here to-night you will be able to say in regard to my remarks that they were in the dog-watch—you know the dog watch is short. A fellow the other night at an entertainment like this spoke about an hour and a half, and somebody, on account of his remarks being too long, called him a Waterbury. On an occasion like this, when I am called upon to speak, perhaps everybody opens his mouth and looks expectantly because I am connected with an alleged humorous paper. It reminds me of a man that went from Podunk to Boston to hear Mark Twain speak. He got there at eight o'clock in the evening, and Twain's lecture began at eight. He went by mistake to the Academy of Music instead of Music Hall, where Twain was. At the Academy the Rev. Joseph Cooke was delivering a lecture on "Ensilage as a Means of Grace." He listened for two hours and a half, thinking all the time he was listening to Mark Twain. At the end of the lecture he went away and got on board the train at eleven o'clock and went home. And the next morning all the Podunkers got around him to hear of Mark Twain. Said they : "Well, Hiram, have you been to Boston?" Said he : "Yes." "And was Twain funny?" "Well," responded he, "he was funny, but he was not so dam funny." (Laughter.) I imagine when you get through with me that you will say about the same thing, you know.

I have only one little point to make this evening, and that is that the press has been promoted to a great extent, and largely encouraged in every way, by jewelers. Did that ever occur to you? I am greatly indebted to the jewelers myself. One time, about fifteen years ago, when I had an idea that I could write a lot of stuff —we always call it stuff in our business—that the people of the United States would read, I kept writing these things, and I sent them to the newspapers and the magazines ; but they never used any of my productions. The only thing that they ever used was the postage stamps that I enclosed. I determined one day that I would have my stuff published some way or other. Well, how could I do it? A grand idea struck me. It is very seldom that I have an idea, and I took that one out of solitary confinement. I determined to start a paper, and said I should be the editor, contributor, and everything else, and as a contributor I should send my articles to myself, and there would be trouble if I didn't accept them. But the difficulty arose—how was I to publish that paper. I had not any money. Have you ever been in that fix? However, I resigned from the position I had, and I scored a point there, for I was presented by my friends in doing so with a gold watch as a token of remembrance. I got $67 on that, and I started a paper with a capital of a million and sixty-seven dollars. The million dollars was a million dollars worth of faith in myself, and the sixty-seven dollars was what I got on my watch. Finally, I found a man who had a lot of old type, who would lend it to me at twenty dollars a week. Myself and an unfortunate printer took this type up stairs ; but we didn't take up the mortgage that was on the type, and it never has been taken up since. But we started *Texas Siftings*.

It is an understood fact that there are about fifteen thousand papers in the United States, and many of them live on the jewelers, just as I have related. In my case, when the business manager was called upon for salary, to no purpose, that watch would come into service to get money from week to week. Every week, you know. The business manager's excuse was always that he had lost the combination to the safe, so he could not pay salaries ; and when he would lose the combination, as he frequently did, we had to work the watch to get money on it. I have known one watch to run a newspaper for a long time.

I want to tell you something about the humor of the funny men of the United States. People say there is something peculiar about this humor that we discover occasionally. All people think that we alleged humorists get up at night to let this humor off. I know that many people will die thinking that I get up at two o'clock to tell a funny story to the hired man. (Laughter.) There are a great many theories about a humorist advanced , but you are likely to find the humorists very commonplace people. I once delivered a lecture on humor in Germany and France, and felt that I knew less about the subject than my audience. I claimed on that occasion that American humor was based on a statement, an ellipsis, and another statement, like "Little Jack Horner sat in a corner, eating a Christmas pie; his mother came in, he had finished eating—they will meet in the sweet by and by." That is supposed to be American humor. About four thousand years ago some gentleman who wrote a part of the earlier chapters of the Bible, said this: "And Asa in the thirty and ninth year of his reign was grievously diseased in his feet, until his disease was exceeding great ; yet in his disease he sought not to the Lord, but to the physicians. And Asa slept with his fathers." Gentlemen, I will bid you a very good-night.

Mr. Keller: I know we all feel like thanking Mr. Knox for the lesson he has given us in financial matters.

The next on our programme is a subject which crowds up almost every day in our life, "The Bar and Judiciary." (Laughter.) Now, I believe I express the sentiment of all present when I say that we do like to meet these legal gentlemen socially, but let it remain socially. Our attorney, Mr. Comstock, will answer to the toast to

"The Bar and the Judiciary."

And following the wake of the following sentiment:

"Twin offspring of a blind, impartial mother,
One profits by the trials of the other."

Mr. Comstock spoke as follows:

ADDRESS OF G. CARLTON COMSTOCK.

Mr President and Gentlemen of the New York Jewelers' Board of Trade:

I am somewhat embarrassed, because this is my maiden speech at a dinner of this kind, and I am sure you will grant me courtesy and consideration if I break down. A lawyer is naturally timid, you know. I dont suppose anyone would be a lawyer unless he felt that he had innate modesty and timidity. You hire a lawyer; he performs the service required and you wait for his bill. But he never will send it, owing to that unfortunate modesty that I refer to, until you press the matter upon him. After a while your conscience troubles you, and finally, after visiting him, he is induced to send you a bill much smaller than it should be.

I felt quite embarrassed when Mr. Downing asked me to speak. Mr. Downing

comes up to the table here, and, without warning, asks me to speak upon this subject. While I was sitting here in troubled mind I turned to Col. Fellows. He was apparently reciting his speech, because in an absent-minded way he was saying: "Prisoner to the bar." Of course, he didn't mean me. (Laughter.) I said to Mr. Downing when he sprung the toast on me, "Which bar do you mean?" He said, "Well, we will let that suggest a bar," and he at the same time pointed to the champagne on the table. I know that that would hardly do, but Dr. Palmer very kindly assisted me by suggesting what bar to fit myself for—the bar of public opinion. What I am going to say will not be a dissertation upon the same bar, but to tell you briefly that I am going to talk on the subject of the insolvency of debtors. The present situation as to debtors is very embarrassing to us lawyers, for when law is needed we are handicapped in our service. A man comes to us who may be in the city for a day. He has an account in the same town and his debtor wants to fail. The lawyer knows that his advice must be of such a nature that the man can treat his creditor fairly and at the same time keep part of his property himself. If we are approached by a creditor and the creditor wants to know what to do in another State, he cannot get a single lawyer to advise him as to what he should do in another State. Here is a law in one State, in Florida, where they allow a man to live on a farm—the farm may be worth a million dollars—and they say that that is exempt. In another State we find that there is not a single law in favor of a creditor, and all that debtors have to do is to shake hands with the creditors, but they need not pay them any money. In our State we do not know what to do as the situation stands. Owing to the shrewdness of lawyers, general assignments are not considered protection to the debtor to-day. It came finally to confessing judgments. All that we advise a man to do is to transfer all his property to the creditors and rely upon their generosity to take care of his family. We are not sure even that that would stand. What is the remedy for this state of things? It is a general bankrupt law. The act now before Congress recognizes the principle that every man before he fails will take care of his family. I think that the principle ought to be recognized in passing laws on this subject that a man should be allowed a reserve for the protection of his wife and family, and then provide for an equitable distribution of the debtor's property, and remove from him all temptation to deceive his creditors.

I look upon this Jewelers' Board of Trade as an organization of great benefit under the guidance of your most efficient Secretary, Mr. Condit. I believe that the percentage of failure has been decreased to you at least thirty-three per cent. since its formation, and I believe that if there could be a sisterhood of these Boards of Trade, even with the law as it now stands, the failures could be reduced even thirty-three per cent more. This can be done by all following the course of your association.

The work of this Board of Trade is a very great deal. It reminds me of the mounting of a crown. It is a crown of glory that you are striving to reach. I now look upon it as a mounting, and every time that you effect an improvement there is a pearl or a diamond inserted in the mounting. And I believe when your labors are through you will have a crown of glory greater than any crown of glory.

I wish to thank you for asking me to speak to you. As Col. Fellows has said, every person strives to mount the ladder of fame. His aim and his ambition is directed to the top. It is where I am striving to look always, and I feel by inviting me to speak here you have lifted me several rounds. I appreciate your invitation most deeply, and thank you most heartily for your courtesy. (Applause.)

Mr. Keller: The next thing in order was to be the "City of Brooklyn," and the toast was to be answered by Mayor Chapin, but he has also been detained from being with us this evening. The sentiment is:

"New York's best girl, in fact our fiancèe.
We'll cross the bridge and marry her some day."

But if their girls keep on carrying guns we wont be so anxious to marry. (Laughter.)

The next in order is a toast which you all will like to listen to, because it is to be answered by a gentleman and a friend of the board, and a friend to all of us, who, by long association, has endeared himself to us and to the trade in general, Mr. Joseph Fahys He will respond to the toast, "Our past officers."

"We'll honor them for glorious labor done,
And carry on the work they have begun."

Mr. Joseph Fahys will address you.

Mr. Fahys spoke as follows:

ADDRESS OF JOSEPH FAHYS.

Mr. President and Gentlemen of the New York Jewelers' Board of Trade: I think you have given me a pretty good toast for a modest man to speak of himself. The only trouble is that the time is so short that I don't believe that I can do justice to myself. And I do not know but that if I did undertake that task I might spoil all that has already been said of me. I believe that I am the only ex-officer that is representing the board here to-night. One of them has been detained by the death of a brother, and the other by being taken away by Divine Providence. I think probably that our departed friend, Mr. William Smith, had probably more to do with bettering this association than any other man. I think he induced a good many of the gentlemen to come together and organize this association. There were about ten on the first occasion, and among the lot was Mr. Smith and several names that I remember and could mention. From the inception of the movement it was evident that we had material enough in that number, both as to the standing of the men and their knowledge of Parliamentary usage, to organize an association. We organized then, and you have had the history of the Board given you by our President. All I can say about the past officers has already been said. I congratulate you upon the success which you have achieved. If you had not done anything else but to inaugurate this banquet you would have your reward. The benefit that one receives from a gathering of this kind is incalculable. I do not think there is any association of men anywhere of a kindred trade that can bring together so many men, and the reaon that this board is based on a broad principle of association. You can go to your homes to-night feeling that you have learned the better side of human nature in the men in your trade by mingling together in a re-union of this kind. Without social meetings you see only the unfavorable side of men. The value of the association to my mind has been more demonstrated by one of our sister cities—to Boston—than perhaps by any other sign. The Yankee never will go into an enterprise unless he gets more out of it than what he puts in. (Laughter.)

The fact that many of these gentlemen from Boston have joined this associa ion is evidence of the goodness of it, and the benefit to be derived from it. From what we know we may eventually get all the other cities of the United States concentrated in this association. It is very gratifying to me as the first president to meet you here and see the success attained. It is a great consolation for a member to attend a creditors' meeting and learn at once, as he can by means of this Board, that there is some one who is a larger creditor than himself. This association, I am glad to learn—I have been absent for some time—has grown greatly. The number of members is now over one hundred and increasing. I should have done an injustice on this occasion if I did not refer to our present secretary, who has so efficiently served us. He came to work for the association in 1886 under great difficulties. He took the association in hand after we had had an experience from the former secretary, which was not altogether pleasant, and of the most benefit. Mr. Condit, by labor and industry and patience, has been of great assistance in bringing this board to its present status.

Gentlemen, I have nothing more to say, except to thank you for this opportunity you have given me to express my obligations to you for allowing me to say these few words. The carrying out of the idea of the association in the future will be a work of pleasure for all of us if we follow out the plan which has been established this last year. And no doubt you will receive more in the future of good from membership by every man doing his duty.

Mr. Keller—The next on our programme is a toast to "Our Ladies," but to make this feature doubly pleasant, I will ask our quartette club to sing us a song—"The Starry Light." It will be sung in familiar language, the German, you all know it.

After the melody of the quartette had died out, Mr. Keller continued: Gentlemen, we will now give place to the ladies. I know that you are not so unladylike but what you will sit here and listen, even at this late hour, to it. We have for that toast chosen a disciple who has from time immemorable been a figure in the world's history, because he was claimed as the endearing one. St. John of old is represented here by St. John of the present time.

"Our Ladies:
A gentle courtier quite debonair,
Has now a word to say about the fair."

I have the honor of introducing to you Mr. St. John.

Mr. St. John spoke as follows:

ADDRESS OF WILLIAM P. ST. JOHN.

Mr. President and Gentlemen of the New York Jewelers' Board of Trade: The hour reminds me that "brevity is the soul of wit."

The science of happiness is to delight in making others happy. That, gentlemen, with the "dearest creatures," is among your every-day achievements. You make them doubly dear, too, to husbands and to fathers. But the bachelor loves you for it; and he delights in you when your art has set engagement in the ring.

The ladies! Fortunately they need no champion. Not, as some say, because speaking for themselves. Too many moons have waxed and waned with me to think it; and the leap years bear no fruit. But, sir, for "the immediate jewel of the soul," let me be called extravagant, but set it down to inexperience.

Our thought is woman!

If trespasser I seem
On poet's inspiration, his own peculiar theme,
'Tis your command impels me Once 'neath her gentle sway,
Divinely hers by birthright, I—mortal—homage pay.
"She" symbols each perfection. She pictures each delight,
'Tis she, Aurora waking; and She, the ebon Night.
She, the Moon in azure, pale if lovers war;
And there, their day—dream's beauty—She, the Evening Star.
She, most ancient Nature, heaven-taught Art is She;
And She, each Grace and Passion, Muse and Minstrelsy.
In diadem of Grace, each fashioned from above,
One peerless gem among them is truest type of Love.
Her musings are with seraphs, whose choicest spirits come
And sweetly name her Mother! in radiant thought of home.
She classes with our jewels, as priceless pearl apart,
Amidst our purest brilliants whose setting is the heart;
But there, unlike to misers, the gold for which they plod,
She ever, if an idol, is still suggesting God! (Applause.)

Mr. Keller: Our entertainment has extended far into the night and the time has passed quicker than we thought it would. We have a great many gentlemen from all parts of the country with us to night who are capable to answer any question and do themselves justice, but you must take the will for the deed this evening. We will ask our quartette to sing a closing hymn for this evening, and in order to give you all a chance to answer a great patriotic toast, we will not excuse anyone from taking part in this song because it concerns us all. The subject before the house will be the Star Spangled Banner, and I ask you all, gentlemen, to sing this hymn.

After the singing President Stern spoke a few closing words and bid the company good evening.

PARIS GOSSIP.

[From Our Special Correspondent.]

PARIS LOSES HER GAIETY AND SHOPKEEPERS SUFFER FROM LA GRIPPE.—BESANCON WANTS PROTECTION AGAINST SWITZERLAND.—STYLES AND NOVELTIES OF THE NEW YEAR.

Paris, January 5, 1890.

Up to 1889, December had always been considered in our lines as the very best month of the year. Manufacturers and retailers who had not been very fortunate during the previous months, used to depend absolutely on the full success of the last one. I regret to have to confess that the defunct year has ended rather badly. Yet the belief that the cause of it was merely accidental may console us to some extent. The influenza alone seems to be answerable for the dullness of which silversmiths and jewelers have had to complain. Although manufacturers had less orders than they used to have at the same period of the previous years, they looked more busy than ever on account of the absence of many artisans whom the epidemic kept away from their work. It went so far that in most places several orders promised for the end of December could not be executed in time. In spite of the splendid weather we have had the first two days of the new year, the crowds that used to flock up the boulevards on the previous *jour de l'an* were replaced this time by groups rather scattered, nor do the countenances of the loiterers express that beaming cheerfulness which our people generally exhibit on fête days.

Besançon's watchmakers are greatly discontented. They used to do an extensive business in France, and the important awards they have received at the Exhibition made them confident that they should be able to hold their own ground. They soon began to see that Switzerland was a terrible competitor. After a close inquiry into the matter, they think, at last, that they have found the reason why. They say that a narrow application of the hall marking law is very injurious to French trade in France. They observe that on account of the necessity of employing inferior alloys to strengthen some parts of a gold watch case, French manufacturers are obliged to use finer gold, so that their cases should not prove to be under the rate when assayed by the cupellation process. Swiss watchmakers, on the contrary, whose goods on their arrival in France are tested with a touchstone, need not trouble about that. Consequently our people labor under a great disadvantage, since they are compelled to pay more for the gold which they employ than their neighbors. Besançon's watchmakers will endeavor to call our government's attention to that singular anomaly of a law protecting the importation of foreign articles against the competition of national goods. They will merely ask that the law should not be more severe for them than for the importers.

Very few novelties appear here and there in the show windows. In the fashionable parts of Paris we see the same display of diamonds, rubies and pearls, contrasted so as to represent sprays of flowers, birds, insects and ornaments of different styles. I have noticed a beautiful necklace consisting of a band of diamond lace work, whose symmetrical pattern exhibits at regular distances, a large round black pearl circled with brilliants. White pear-shaped pearls alternating with black ones hang from it (rather wide apart) as pendants. Rings and ear rings are nearly all very simple in design borrowing their whole value from the quality of the stones. They generally consist of a ruby, or an emerald, surrounded with diamonds. Yet I have seen at some places, conspicuous for the originality of their display, several rings and ear rings in chased gold and vari-colored enamel, consisting of chimeras, framed with a gold circle or lozenge on a pierced background. Some exhibit a salamander, emblem of Francis the First, of France.

For brooches and corsage garnitures, artists in jewelry have decidedly more scope than for any other article. The entire kingdom of nature seems to offer them models to copy, and if that happens not to be sufficient, fancy supplies a great variety of monsters. Ornaments, also, reproduced or freely imitated from the works of ancient designers, such as Etienne Delaulne, Hans Colldert, Gilles Légaré, etc , can be extended more or less so as to form an elegant brooch, a shoulder piece or a corsage garniture. Butterflies have been worn on the bodice or on the hair for a considerable time. Yet our artists are never tired of trying their hands on that lightest of Nature's works, which, I must confess, they often represent as very heavy. One of the prettiest I have seen is made of gold trellis and various colored stones arranged so as to make it appear thoroughly natural. In looking at it people not only admire its lovely hues, but they feel confident that it is going to fly.

In the silver line we cannot expect to find any novelty, except in small articles, such as toothpick holders, porte-menus, etc., in which a great variety of figures in all kind of attitudes are introduced. I have just seen a thermometer placed, instead of the strings, right along the handle of a silver violincello, on which a young artist, in same metal, dressed in the fashion of the last century, plays in the most inspired manner, as though there was nothing the matter with the instrument. French silversmiths in the flat or hollow ware lines do not allow their fancy to carry them so far. In fact, they seem to have entirely banished it. Those who have condescended to abandon the Louis XV. style are now engaged with the Louis XVI. one. The jug, basin and mirror in oxidized silver, reproduced here, are very neat specimens of that fashion. Garlands of roses, gently drooping, adorn in a very quiet way the three pieces. They look as though they had been added *après coup;* yet they are prettily arranged and beautifully chased. The shape of the jug is elegant and the basin is of a comfortable size for a French one. The mirror is of that graceful oval shape which characterizes the Louis XVI. style, and the dolphins running along it on the sides at the base are full of life.



Jaseur.



[The Circular is not responsible for the opinions or statements of contributors, but is willing to accord space to all who desire to write on subjects of interest to the jewelry trade. All communications must be accompanied by a responsible name as a guarantee of good faith. No attention will be paid to anonymous letters. Correspondence solicited.]

A WORD OF ADVICE TO RETAIL JEWELERS.—HOW TO MEET COMPETITION.

To the Editor of the Jewelers' Circular:

It is a deplorable yet, indisputable fact that the jewelry trade is cut into more by other lines than almost any other business. All will readily appreciate what I mean, and it is not necessary for me to explain further. Now a good many remedies have been proposed for this. I, for one, feel that jewelers should take the matter into their own hands and fight for their rights in the most effective manner. While I do not believe in jewelers turning their stores into general merchandise houses, as the dry goods people do, yet I think there are many lines of goods which are not nearly so foreign to a jeweler's stock as jewelry is to dry goods and groceries. I might mention such goods as silk umbrellas, glass-ware, fans, kid gloves, purses, silk handkerchiefs, etc., etc. Any jeweler can handle such goods with profit, and in a measure retaliate upon those who mercilessly dabble in his legitimate lines. That the evil spoken of is growing tremendously there is no doubt, and it seems as if, unless there is a new deal, the regular jeweler as we now know him, will soon be obsolete. I am well aware that many jewelers have awakened to a sense of this state of affairs, and have added to their stocks one or more of the lines of goods above mentioned, and, I hope, are as well satisfied with the result as the writer himself is. I am free to boast that I am much better satisfied than our worthy competitors the dry goods merchants, etc., seem to be, in fact so well satisfied that I now wish to advise all my brother jewelers to follow suit, especially when they have the competition we mention. This fighting the enemy with their own weapon is the quickest way to victory, and if all the jewelers would join in a general uprising, it would not be long before we would see a flag of truce hanging out over the fort of the enemy. We need not expect protection from any outside source. We shall be obliged to strike the blow ourselves if it ever is to be struck.

There is one article of universal use which I think there is a fine opportunity for jewelers to realize a handsome profit upon and at the same time sell it at so low a price as to render it a big advertisement. I mean sewing machines. It is a well known fact that there is a tremendous profit to some one on sewing machines. But there is, as a rule, no way to buy them so that they can be sold at a reasonable price. The manufacturers compel the agents to sign an iron-clad agreement not to sell below a certain price, which ranges from $45.00 to $60.00 on the different grades. Now it is a fact that if these machines were sold at the ordinary profit charged on watches for instance, the price would only be about half as much. The time is fast approaching when the manufacturers will be obliged to step down from their "high horse," and when sewing machines will be sold for what they are really worth, like other goods. The writer of this article has been investigating this subject considerably of late, and is now in possession of some knowledge which may prove profitable to members of the jewelry trade. Through his solicitation one reliable manufacturing concern has consented to construct some special machines for the jewelry trade. These machines are to be first-class in every respect, and fully equal in finish, style and durability to any regular $50.00 machine. They will be named the "Jeweler," and will not be sold nor price quoted to anyone outside the jewelry trade. There will be three grades of them, and the prices will be low enough so that that they can be sold for from $25.00 to $30.00, and afford a handsome profit. Now if this great break in the price of sewing machines is to come sooner or later, why should not the jeweler help it along and get the credit of it? There is little risk run in selling them even if they are sold on installments, as it is customary to take a lease on the machine and it can be held until the last dollar is paid. This subject especially recommends itself to all those who are conducting watch clubs. No doubt a large number can be disposed of in every town, particularly when the reduced price and the easy terms of the club are taken into consideration.

Wide Awake.

WHO HAS EXCELSIORS' "PRACTICAL HINTS?"

Moorefield, W. Va., Jan. 11, 1890.

We would like to purchase a copy of Excelsior's "Practical Hints. Are willing to give $5 for it.

J. Beaty & Son.

BACK NUMBERS TO BUY AND SELL.

To the Editor of the Jewelers' Circular:

We have The Circular complete from 1876 to the present time, and would like to dispose of them. Will sell them cheaper than the regular price. Please quote price.

A. & B., care of The Jewelers' Circular.

AN APPEAL FROM THE FRONTIER.

Lehigh, Ind. Ter., Jan. 6, 1890.

To the Editor of the Jewelers' Circular:

I, with many others, am troubled by wholesale houses selling watches to the dry goods and grocery merchants of the western towns. What can be done about it? Can't the jewelry trade protect us little fellows? Why do they continue to sell to houses that will sell to anyone outside the regular trade? Will you please try to help us little fellows some, and obllge your suffering brother?

Watchmaker.

KIND WORDS.

Flemington, N. J.

Could not get along without it.

S. L. Hart.

Ko-Komo, Ind., Jan. 9, 1890.

Your December number did not reach me. Please send it as it has some optical matter that I am very anxious to read.

Will Haseltine.

Sharon, Pa, Jan. 14, 1890.

Enclosed please find amount of subscription to The Circular for one year. I am anxious to have it every month; in fact, I would feel lonely without it. So consider me a constant subscriber.

P. Brady.

Trenton, N. J., Dec., 25, 1890.

Enclosed please find amount of subscription. I desire to say to you that your publication is very valuable to me. When I worked at watchmaking it gave me much valuable information. From its columns I learned of Dr. Bucklin's class in optics, and I would say here that the course taken with him has been productive of excellent results. I was the first to send my entrance fee. The knowledge imparted to me by him was practical. By making a specialty of the eye, I have founded a paying optical trade. I cannot too highly commend Dr. Bucklin's methods and clear demonstrations of the difficulties in a thorough examination of the refractive errors existing in eyes.

Geo. F. Applegate.

Fashions in Jewelry

A Lady's Rambles Among the Jewelers.

THE display of jewelry since the holidays appears to be even finer than that previous, or amid less distractions it appears more noticeable.

*** *** ***

ONE of the diamond parures is a large double bow with ribbons of diamonds, and dependent from this, streamers and tassels. I would not care to enumerate the number of large diamonds that fill the centers of this piece. These are edged with smaller diamonds making an entire breadth of an inch and a half in width. The streamers are at least eight inches long and are made up solidly of diamonds set in gold network. The bell tassels are of diamond filaments two inches long. Mere description can give no idea of the magnificence or rather gorgeousness of this adornment.

*** *** ***

ANOTHER remarkable piece is a diamond rosette at least four inches in diameter. The ribbon-like fluted form is of silver and set with large diamonds, and sprinkled with smaller diamonds and culminating in a colossal center brilliant.

*** *** ***

WIDE collars of gold mesh are set with diamonds through which wanders a design in small rubies. It is evidently designed for long-necked women whom it would adorn superbly.

*** *** ***

FOLLOWING the fashion set by the Princess of Wales is a wide black velvet band on which is a beautiful Renaissance effloresence of silver and diamonds.

*** *** ***

A FEATURE of the season is the pendants of semi-precious stones mounted in diamonds. These take the simplest forms, being usually an oval or round design with the ribbon loop which is of diamonds. An example is in a sapphire *en cabochon* surrounded by diamonds, large opals, Persian topazes, pink and orange topazes, beryls, moonstones and cat's-eyes. One of the loveliest of these dainty ornaments was a large lustrous moonstone that immediately suggested the filmy lace toilet which would appropriately accompany it. Exceedingly pretty also were the pink topazes and the deep yellow topazes like crystalized tongues of flame.

*** *** ***

SEED pearls in numberless strands are suitable necklaces for debutantes. These are caught up in the center with diamond loops, and often make several festoons draping softly the collar bones of beauty too immature.

*** *** ***

ONE of the most artistic collarettes is of diamonds not too large set in diamond-shaped forms of silver, the points touching on the alternate points. Above and below, rests a pearl. The chevron effect of this piece was novel and attractive.

*** *** ***

CLASPS prevail in rounded forms. The center for example is a pearl surrounded by alternate rubies and pearls, or a diamond is the piece de resistance, and emeralds or sapphires alternate about it. This form is greatly used in looping up the festoons of pearls or of gold in forming necklaces.

*** *** ***

FLEXIBLE gold meshes furnish the setting for a great deal of jewelry, especially when it takes the form of necklaces and bracelets, or bands for the hair. These are sewn with gems, which the meshes are supposed to hold ; the idea is agreeable as well as artistic.

*** *** ***

A BRACELET made of at least a dozen chased gold rings is fastened and bound together by an immense round clasp made of superb pearls, rubies and diamonds, the large pearls being the center for smaller rings of rubies and diamonds.

*** *** ***

WATCHES are worn more and more and assume every fanciful caprice. The latest is an apricot of enameled gold which swings from the wrist. Down in the center are two little black hands, and engraved on the surface around a hole through the little black hands are seen chased numerals.

*** *** ***

A COMPANION watch to this pretty trifle is a green gage plum. The peculiarity of these watches is that looking down into the sunken dial plate it appears to be lighted from some concealed taper. Presumably this is but a reflection from the highly burnished inside.

*** *** ***

ANOTHER novelty in the form of a watch is a spray of roses. The stem is made of diamonds and serves to fasten the spray on the breast. In the heart of the rose, which is of pink enamel, a watch is cunningly inserted. Lifting the rose, which is flexible, one discerns the time.

*** *** ***

STILL another watch is a half sphere of gold within a crystal sphere. This is the watch which is surrounded by rayed forms set with sapphires. This watch is a chatelaine.

*** *** ***

THE most exquisite but delicate watches intended to be worn in the usual way are made up of pearls sewn with tiny emeralds. The tiny chain is chased and enameled with green and terminated with a ball, powdered with diamonds and emeralds.

*** *** ***

ARTISTIC watches are overlaid in enamels with the initial as a center ornament formed by garlands in enamel. Ladies of sporting tastes have their watches concealed in enameled jockey caps.

*** *** ***

IT SEEMS that entomology among the jewelers can go no further when cat's-eyes serve to furnish the vertebræ of a caterpillar to be worn as a brooch. These segments are separated by amber colored hairs and the vraisemblance is carried to a point that makes one shudder.

*** *** ***

ANOTHER horrible caprice is the enlaced folds of a serpent whose glittering scales are simulated in enamel and has diamonds for its glittering eyes. Against this a lizard made of diamonds with a

streak of small emeralds down its back is a mild and amiable ornament.

*** *** ***

THERE are some superb combs to be seen now-a-days notwithstanding the vogue of the Catogan braid. These are of amber shell with mounts of large pearls set round with smaller diamonds, or varied now and then by rubies and emeralds.

*** *** ***

OVAL purses of leather are covered with slender but large gold meshes, leaving a center plate for the name.

*** *** ***

BEAUTIFUL garlands in gold are swung around the necks of scent bottles.

*** *** ***

WHITE linen effects appear in sleeve buttons. They are oval in form and have a single diamond, ruby or emerald sunk in the center. Other sleeve buttons are found in the round designs having a precious stone set in the center of gold wheels and spirals.

*** *** ***

A GOLD watch chain was seen made of small perforated and chased plates closely attached together.

*** *** ***

GARTERS are so magnificent now in Paris that exquisite cases are made for them that repose on the toilet table amid all the other luxuries of the great world of dress.

*** *** ***

OLD fashioned bead purses or pouches are of dark beads with a square outlined in dull blue beads and in the center of each a pearl. The mounting is of burnished gold.

*** *** ***

TINY heads of famous beauties set in gold and diamonds serve as sleeve buttons.

*** *** ***

MAGNIFICENT bonbonnieres take the place of the snuff boxes of olden times as presents of value. They imitate these in fact. A large painting in enamel of the Duchess of Devonshire set round with closely set diamonds, is the lid of one of these superb boxes.

*** *** ***

NEVER were so many large pearls seen everywhere.

*** *** ***

THERE is an effort to bring back pink coral. It is very lovely and becoming in rings set about with brilliants.

*** *** ***

SILVER garter clasps for obvious reasons have their surfaces diversified only by etching. The millinery of these is very sumptuous. Pink and apple green is a favorite combination. The yellow garter has a vogue of its own.

*** *** ***

MEN'S suspender clasps in silver are etched and silver chains attach them to the trouser buttons. There is a wide field in appropriate designs yet open in these and garter clasps. As yet, it has rarely got beyond the daisy and violet stage.

*** *** ***

ELEPHANT, coon and lizard skins are used in purses, card cases and note books. Coon skin is exquisite in tint, being very light ecru with a blending of green in the tint. Such a purse was mounted in gold with a vine of greenish tint as the ornamentation. The harmony between this and the leather was exquisite.

*** *** ***

LIZARD skin assumes every caprice of tint, gray, drab, brown, green, and even crimson. These colors can be easily chosen to harmonize with a costume, and the skin is considered worthy of the handsomest mounts in silver and gold. Handbags of lizard skin are also among the novelties of the season.

*** *** ***

COFFEE services of copper enamel appear in repoussé designs. The ornament which is usually floral and very natural is carefully modeled in silver and not too highly burnished. The contrast between the dull red copper and the silver is exceedingly agreeable.

ELSIE BEE.

The Jewelers' Security Alliance

The regular monthly meeting of the Executive Committee was held at the Alliance office on the 10th inst. There were present Vice-President David Untermeyer, J. B. Bowden, Chairman, Chas. G. Lewis, Treasurer, Messrs. Kroeber, Stuart, Butts and Secretary Hodenpyl.

The following were admitted to membership: Louis I. Stephens, Jacksonville, Fla.; C. A. Safford, Kingston, N. Y.; F. H. Sheaver & Co., Bay City, Mich.; H. O. Richardson, Haverhill, Mass.; S. McDougall, Brooklyn, N. Y.; Richard A. Porter, Patchogue, N. Y; Huger Manufacturing Co., Newark, N. J.; John R. Knight, Boston, Mass.; Lewyt & Salabea, Baltimore, Md.; Alling & Co, Newark, N. J. On January 7, Irving L. Russell, 11 John street, New York City.



There were present at the meeting last month of the Executive Committee of the Jewelers' League, Messrs. Greason, Bardel, Jeannot and Sexton. Proofs of the death of Mr. W. S. Richardson were presented and payment to the beneficiary ordered, this being the only death claim unsettled. Messrs. Greason, Bardel and Jeannot were appointed Reception Committee for the annual meeting to be held January 21st at Masonic Hall. There were seven changes of beneficiary received and approved and the following applicants were admitted to membership: Arthur E. Austin, Providence, R. I., recommended by Wm. Smith and C. H. Downes; Louis E. Bayer, St. Louis, Mo., recommended by John Graves; Wm. Bourke, Brooklyn, N. Y., recommended by J. W. Senior and W. W. Covell; Chas. E. Bunker, Chicago, Ill., recommended by G. P. Titus and C. L. White; Ed. P. Camp, Garden City, L. I., recommended by J. P. White and A. R. Dorchester; H. P. Eakins, Lead City, S. Dakota, recommended by W. Eakins; Achille Goetschel, Savannah, Ga., recommended by E. Muhlberg and M. Steinberg; Albert Linz, Sherman, Tex., recommended by Joseph Linz; Chas. McDougall, Brooklyn, N. Y. recommended by J. B. Bowden; Mike Nathan, Savannah, Ga., recommended by E. Muhlberg and M. Steinberg; Gustave Robinson, N. Y. C., recommended by G. E. Marcus and E. Francis.

WATCH AND CLOCK ESCAPEMENTS.*

By Dudley W. Bradley.

The first device that has been chronicled for regulating the speed of a train of wheels for indicating the passage of time was that of a swinging cross, on the staff or arbor of which were placed two projections or pallets at an angle of 90° to each other. These pallets

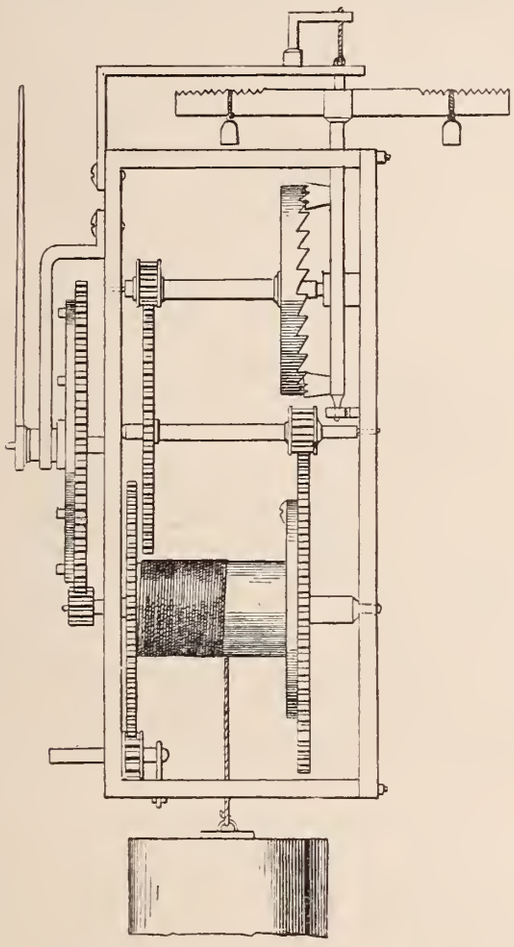


Fig. 1.

were alternately operated upon by coarse teeth cut on the face of a wheel commonly termed a crown wheel, from its fancied resemblance to a crown. The arms of the swinging cross were notched in the same manner as our scale beam, and on each arm was hung a small weight. These weights were moved outward to slow the train and inward to fast it. The cross was suspended by a short piece of cord, which served three purposes: First, it had a tendency to bring the cross back to zero at the end of each vibration; second, to suspend the cross; and third, to lesson the friction. The device fig. 1, was the invention of Henry Vick, of Germany, about the year 1370.

In the next stage, we find the pallet staff placed horizontally and a contrate wheel placed in the train so as to bring the face of the scape wheel horizontal to meet it. Instead of weights hung on the arms, as in the first stage, balls were put on the ends, arms and screws were used to move them out and in.

In the next stage (fig. 2) we find one of the arms cut off, and the other made somewhat longer, thus making an incipient pendulum. At this stage we find occasionally an extension of a ring to connect the arms of the cross—the common balance wheel of the present day. This had no means of regulating the speed, except by increasing or diminishing the weight or motive power.

All of the early crown wheels were made with an odd number of teeth, for instance, fifteen for watches and twenty-nine or thirty-one for clocks. It is generally supposed that the early horologists were not aware that a verge escapement could be made with an even number of teeth in the scape wheel, but the writer possessed a very old Dutch mantel clock, whose scape wheel had twenty-eight teeth. With an odd number of teeth the pallet staff lay directly across the center of the wheel, but with an even number, it had to be placed to one side to the extent of one-quarter of the distance between two scape wheel teeth. The number of teeth cut in the scape wheel was not considered a matter of importance until the present length of seconds was established, which requires thirty teeth in order to give sixty beats to the minute.

At this time the crown wheel and verge escapement would run without any aid in giving the balance a pendulous motion, but the vibrations were very irregular in the extent of the arc and time occupied. Various expedients were resorted to for returning the balance to zero or resting point. Straight and fine steel springs in every variety of shape were tried. A clock the writer once saw, that was made in Italy about 1650, was arranged to perform the above operation, and also had a slide adjusted by a screw for regulating. The Abbe De Hauteville utilized the elasticity of a coiled spring in the direction of the length of its axis, instead of the circle of tension and distension. Huyghens, in 1675, seems to have been the first to exhibit a spiral spring as now used. The addition of the pendulum spring or what is usually termed hairspring, gave to the balance a sharper, quicker, and better defined vibration, allowing the balance to be made of double the weight as theretofore, and at one bound placed the train under the control of

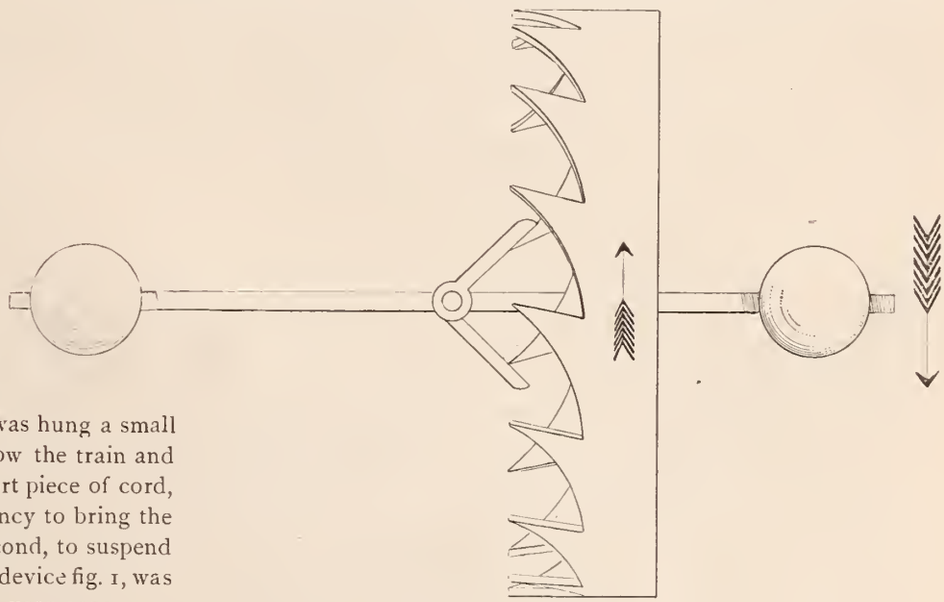


Fig. 2.

the balance and the latter under the control of the operator. These several steps followed in a slow progression during a period of about 400 years. I do not think that during that time when one effected an improvement every one else set to work to improve that, as in the present age.

The unequalities in the trains of wheels causing unequal application of force, and the changes of temperature causing unequal resistance to that force have been and still are the great stumbling blocks to perfect time-keeping. During these years the pendulum had increased in length and symmetry until it had attained fair proportions and a stature of 39.2 inches to center of oscillations, beating seconds—our present standard. As the pendulum grew in weight, the vibration from a pivot had to be abandoned because it caused too

* Copyright by Jewelers' Circular Pub. Co., 1890.

much friction. Cords were tried but these were very susceptible to atmospheric influences and would break at inconvenient moments. Friction rollers were tried, but though these performed with a fair amount of success, they were expensive and would become choked with dust. The knife edge cut into its seat and worked

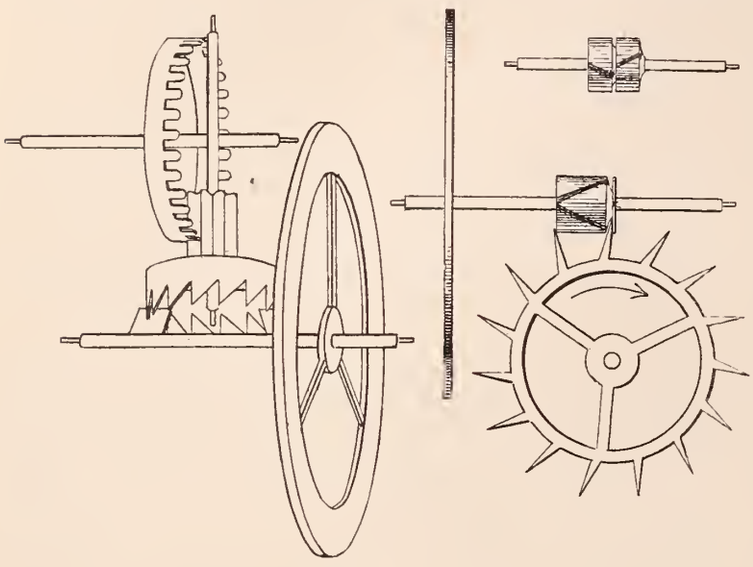


Fig. 3.

hard. Then it was inverted and the edge wore off. Finally the thin steel was adopted, and proved the best expedient of all used up to that time, for though it subject to the influence of temperature, it, nevertheless, if properly made and hung, will vibrate a heavy weight for a long length of time; a spring $\frac{1}{60}$ of an inch thick and 1½ or 1¾ inches wide being capable of sustaining 600 to 700 pounds vibrating for a hundred years without liability of breaking.

In 1680, W. Clement, a London clock maker, invented the recoil, or, what is usually termed the anchor escapement, from its resemblance to the conventional ship's anchor. In this escapement the teeth of the scape wheel were upon the periphery instead of its face as theretofore, and on the line of the pallets. It allowed of a much heavier pendulum and the pallets being farther from the center of motion, it ran with less power and operated with a shorter arc of vibration. This was a decided improvement over the crown wheel and verge; still, as the pendulum was to a very large degree under the influence of the train, ingenious horologists strove to perfect a better mechanism (see fig. 3).

The next improvement of importance was the invention of the dead beat escapement (fig. 4) by George Graham, about the year 1715 or 1720. This escapement allowed of a still smaller arc of vibration, an unlimited weight of pendulum and it also reversed in a measure the order of the disorder (if I may use this phrase) for while the recoil escapement would run faster with an increase of force, the tendency of the dead beat escapement was to run slower.

The difference between the recoil and dead beat escapements is not, I claim, thoroughly understood by one-half the trade. In the recoil or anchor escapement, the tooth of the scape wheel after leaving one pallet strikes directly on to the impulse angle of the next; consequently the distance that the pallets and pendulum move in vibration after being struck by the tooth causes a proportionately backward movement of the train and the scape wheel can never be said to be in a state of repose. It is in a state of unrest, it moving forward and backward continually. In the dead beat escapement, the escaped tooth strikes on to a segment of a circle of which the pivot of the pallet staff is the axis. Here it remains dead or in a state of rest, until the pendulum has completed that vibration and returned to that point at which it slides on to the angle of impulse where it gives off its share of propelling force to the pendulum and escapes on to the next pallet, as its turn comes, to repeat the same operation. The Graham escapement has been almost universally adopted in the manufacture both of the finer grade of clocks and the cheaper grade for common use.

I have said that the tendency of the recoil pallets was to run faster with increase of force while the dead beat were inclined to run slower. When these tendencies were found to exist, efforts were made to reconcile or harmonize the two by means of what is termed the half dead or a slight recoil on the angle of repose. Instead of the engaging tooth striking on to a segment of a circle, it rested on a circle having from 3° to 5° rise, which caused a slight recoil. The question, how much recoil would harmonize these differences was never satisfactorily settled, and thus the device was never so successful as to be called a specific cure. In clocks run by nights the motive power always remains the same, but the applied power at the escapement varies under different circumstances, for in a house clock it depends much upon the cleanliness of the oil and finish of the several parts, and in tower clocks exposed to wind and storm without and to dust and damp within, together with the variable condition of the oil and the often coarse pivots and pitchings, although the motive power will always be an uncertain quantity. The Graham escapement, together with the enormous pendulums allowed by it, had a greater influence in modifying these vagaries than any escapement previously constructed and it is a question,

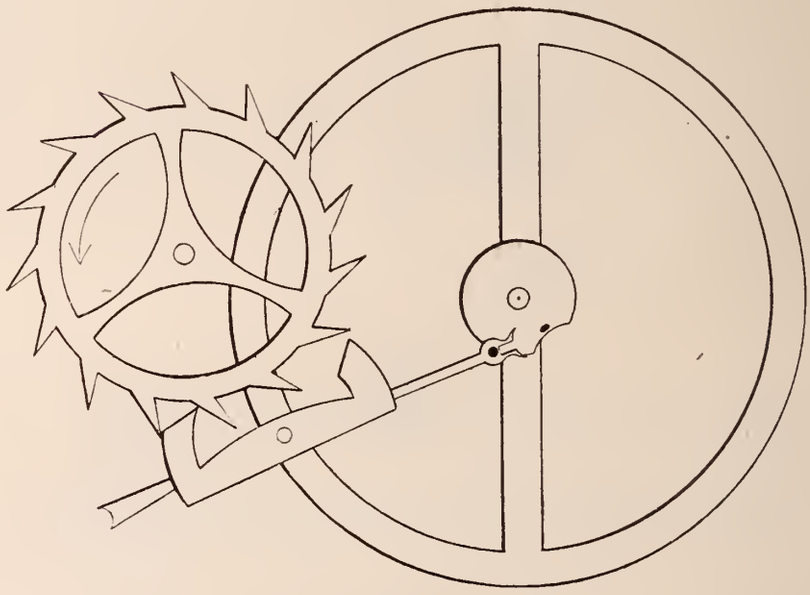


Fig. 4.

whether we have effected anything since worthy the name of improvement.

(*To be continued.*)

Old Silvering.—To imitate old artistic productions made of solid silver, the groundwork and hollow portions not subject to friction are covered with a blackish red, earthy coat, the parts in relief remaining with a bright lead luster. Mix a paste of finely powdered plumbago with essence of turpentine, to which a small portion of red ochre may be added to imitate the copper tinge of certain old silverware; smear this over every part of the article. After drying, gently rub with a soft brush; the reliefs are set off by cleaning with a rag dipped in spirits of wine. To give the old silver tinge to small articles, such as buttons and rings, throw them into the above paste, rub in a bag with a large quantity of dry boxwood sawdust until the desired shade is obtained.



IMPROVED SPLIT-SECONDS WATCH.

The new feature of this split-seconds watch consists inhaving the mechanism for operating the split-seconds hand located above the dial, between the two second hands. The split-seconds hand is made longer than the chronograph-seconds hand, and it has a small heart-shaped cam fastened on the top. This hand is loosely fitted on the arbor of the center chronograph wheel. The chronograph-hand is fastened at the extreme end of the arbor, and carries the lever which operates on the heart-shaped cam and which

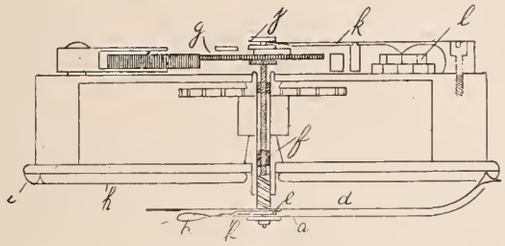


FIG. 1.

is pivoted on the under side of the hand and actuated by a spring which is made integral with the hand. This spring is formed to suit the design of the hand.

To stop the split-seconds hand a different mechanism can be employed for chronographs with straight or side gear. The center chronograph wheel can be made to raise up and down while running by means of a lever connected with the usual ratchet wheel; said lever engaging a grooved collar fastened at the end of the center chronograph arbor.

A light ring of metal is adjusted above or around the dial, and has

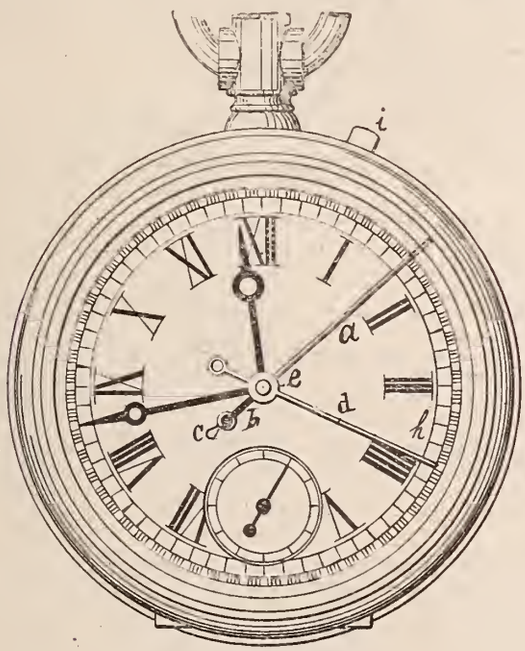


FIG. 2.

the top side finely knurled. The split-seconds hand is made longer than the chronograph hand, so as to extend under the bezel of the case, and has its extreme end ground to a V shape. To stop it the center chronograph wheel is lowered, and carries down the split-seconds hand, the stopping being effected by the V-shaped end of the said hand coming in contact with the knurled ring. To release the split-seconds hand, the center chronograph wheel is raised, thereby releasing the hand and preventing it from contact with the knurled ring. To operate the hands the usual push-piece is employed.

For watches with bevel crown and conoidal gear, a ring (also finely knurled) is located under the bezel and made to raise and fall by suitable mechanism.

Fig. 1 shows a side view of the split-seconds mechanism; *a* is the chronograph hand, with the small pivoted lever *b* and spring *c*; *d* is the split-seconds hand with the heart-shaped cam *e*; *f* is the arbor of the center chronograph wheel; *g* is the grooved collar; *k* is the lever, engaging grooved collar; *l*, ratchet mechanism. Fig. 2 is a front view of watch, showing dial, knurled ring, and hands with split mechanism. Figs. 3 and 4 show the hands separately.

The advantages claimed for this invention are as follows: Split-

FIG. 3.

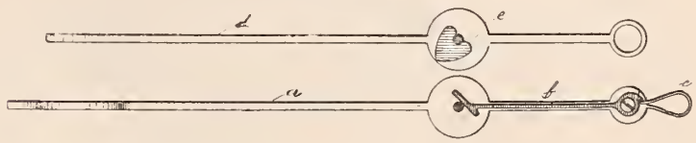


FIG. 4.

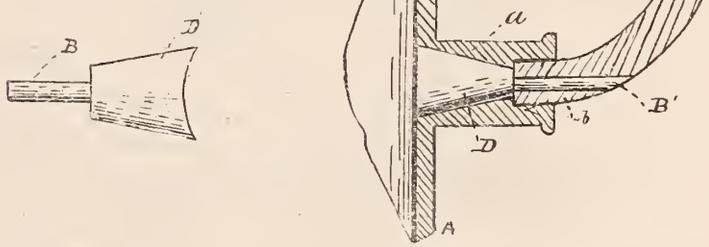
seconds hand being composed of only the hand itself and the heart shaped cam, is very light and will, when released, jump rapidly after the chronograph hand; the mechanism of the two hands being closely connected, they will not separate while running; the split-seconds hand will not quiver in stopping, and the friction is reduced to its minimum; the manufacture of the watch is simplified thereby, saving considerable expense.

Henry A. Lugrin, of Brooklyn, N. Y., is the patentee of this invention, letters patent for which were granted December 31st, 1889. Mr. Lugrin has effected numerous improvements in the manufacture of chronographs, and is at present engaged in that department of the American Waltham Watch Co.

PATENT WATCH-BOW FASTENING.

The essentially new feature in this invention are the rivets or fastenings D B′. The accompanying drawings represent an enlarged view of one of the fastenings and a detail view in section of one side of the bow.

In constructing these watch-bows for stem-winding watches the inventor, James M. Calhoun, Plymouth, Pa., employs watch stem A, having integral therewith right-angular arms *a a*, provided with sockets *b b*, for reception of stemmed cones D. The ends of the bows B are apertured for reception of the stems B′ of cones D, the cones being tapered and lengthened from their vertex to form the



stems shown. The stems B′ project through orifices formed at either end of bows B, and their ends are riveted and fitted flush with the periphery of the bows. The stemmed cones D are first inserted in sockets *b*, and the metallic sleeve *c* is fitted into stem A, which completes the work, sleeve *c* fitting flush against the inner periphery of the stem.

Besides its utility the inventor claims for it simplicity, ease of construction, and intrinsic value, when placed on a gold or silver case (weight being about 2½ dwt.) of many times the cost of production.

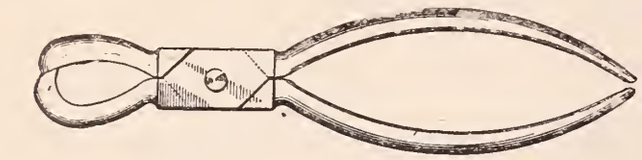
NEW WATCH CASE PLIERS.

Martin N. Coe, of Ashland, Wis., was recently granted letters pat-

ent on improved watch case pliers which possess several praiseworthy qualities. They are designed for use in the repair of watch cases that are sprung out of shape, or spread so that the flange does not hold its seat firmly, and also for the removing of dents in such cases.

In the illustration, Fig. 1 represents the side elevation of the pliers; Fig. 2, a diagrammatic view showing the pliers as employed for removing a dent, and fig. 3, a diagrammatic view showing them as employed for restoring a sprung section of a watch case to its normal shape. The reader will note the peculiar shape of the jaws

FIG. 1.



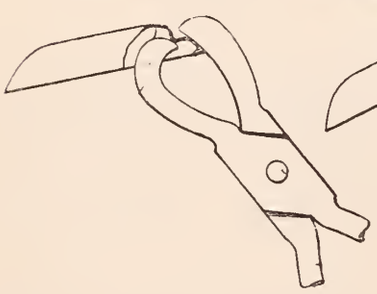


FIG. 2.

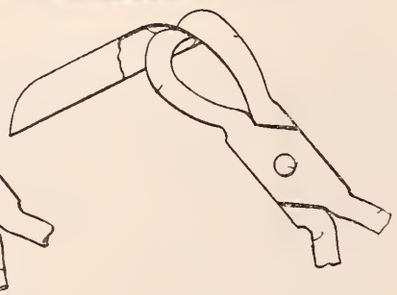


FIG. 3.

whose opposing extremities are struck on a circle, the upper jaw being provided with a concave inner face, and the lower jaw being provided with a convex outer face, the latter being overlapped by the end of the other jaw. By studying the diagrams he will readily understand the action of the tool.



The following list of patents is compiled from the records of the United States Patent Office, and specially reported to THE JEWELERS' CIRCULAR.

Issue of December 24, 1889.

Design Patent No. 19,526—WATCH CASE. WILLIAM PARKER, Brooklyn, N. Y. Application filed March 21, 1889. Serial No. 304,232. Term of patent 7 years.

Design Patent No. 19,530—BRACELET. FRANK H. LA PIERRE, New York, N. Y. Application Filed March 15, 1889. Serial No. 303,499. Term of patent 3½ years.

417,763—DEVICE FOR DEMAGNETIZING WATCHES. FRANCIS J. WHILTON, Boston, Mass. Filed Oct. 14, 1889. Serial No. 327,000. (No model.)

417,927—AUTOMATIC ELECTRIC CLOCK-WINDING DEVICE FREDERIC A. LANE, New Haven, Conn., assignor of one-half to Frank E. Morgan, same place. Filed May 24. 1889. Serial No. 311,988. (No model.)

417,928—ELECTRIC-WINDING CLOCK. FREDERIC A. LANE, New Haven, Conn., assignor of one-half to Frank E. Morgan, same place. Filed Sept. 9, 1889. Serial No. 323,378. (No model.)

417,987—REGULATION INDICATOR FOR TIMEPIECES. JOHN T. CLARK, Columbia, S. C. Filed Aug. 15, 1889. Serial No. 320,880. (No model.)

417,999—WATCH BOW FASTENER. EZRA C. FITCH, Newton, Mass. Filed Feb. 18, 1889. Serial No. 300,226. (No model.)

418 047—WATCH CASE. CHARLES F. MORRILL, Boston, Mass. Filed April 4, 1889. Serial No. 306,019. (Model.)

418.125—ELECTRIC SYNCHRONIZING DEVICE FOR CLOCK PENDULUMS. JAMES HAMBLET, Brooklyn, N. Y. Filed March 7, 1889. Serial No. 302,295. (No model.)

418,127—MEANS FOR JEWELING AND END-SHAKING ARBOR PIVOTS. GEORGE E. HART, Waterbury, Conn., assignor to the Waterbury Watch Company, same place. Filed Aug. 22, 1888. Serial No. 283,407. (No model.)

418,128—WATCH. GEORGE E. HART, Waterbury, Conn., assignor to the Waterbury Watch Co., same place. Filed Oct. 7, 1887. Renewed Nov. 6, 1889. Serial No. 331,588. (No model.)

418,129—WATCH MOVEMENT PLATE. GEORGE E. HART, Waterbury, Conn., assignor to the Waterbury Watch Company, same place. Filed Nov. 30, 1887. Renewed Nov. 26, 1889. Serial No. 331.589. (No model.)

418,130—STEM-WINDING WATCH. GEORGE E. HART, Waterbury, Conn., assignor to the Waterbury Watch Company, same place. File Nov. 30, 1887. Renewed Nov. 26, 1889. Serial No. 331,590. (No model.)

Issue of December 31, 1889.

Design Patent No. 17,345—GLASSES FOR EYE-GLASS AND SPECTACLE FRAMES. JOHNSTON OPTICAL Co., Detroit, Mich. Application filed Oct. 17, 1889. Used since Aug. 16, 1889. "The word 'Rainbow.'"

Trade Mark Patent No. 17,357—CATALOGUES. F. M. SPROEHNLE & Co, Chicago, Ill. Application filed Oct. 24, 1889. Used since June, 1889. "The words 'Our Salesman.'"

418,218—WATCH CASE, LOCKET, OR SIMILAR ARTICLE. ADOLPH PEABODY, New York, N. Y. Filed April 3, 1889. Serial No. 305,879. (No model.)

418,334—WATCH. HENRI JACCARD, Bienne. assignor to L. Marillier-Deuzler, Neuveville, Switzerland. Filed July 18, 1889. Serial No. 317,849. (No model.) Patented in Switzerland Feb. 13, 1889, No. 573.

418,381—STEM-WINDING AND SETTING WATCH. ALBERT H. POTTER, Geneva, Switzerland, assignor to the Trenton Watch Company, Trenton, N. J. Filed Jan. 29, 1889. Serial No. 297,919. (No model.)

418,401—STEM-WINDING WATCH. JOHN J. CROUGHIN, New York, N. Y. Filed March 27, 1889. Serial No. 305,047. (No model.)

418,577—STOP WATCH. HENRY A. LUGRIN, Brooklyn, N. Y. Filed Aug. 1, 1889. Serial No. 319,434. (No model.)

418,614—CLASP. MARTIN V. HAMMACK, Knoxville, Tenn. Filed Oct. 12, 1889. Serial No. 326,768. (No model.)

Issue of January 7, 1890.

Design Patent No. 17,383—BUTTONS OF JET AND METAL. LEO PRANGE. Brooklyn, N. Y. Application filed Nov. 9. 1889. Used since Sept. 1, 1889. "The word 'Diamond.'"

Design Patent No. 19,563—MATCH BOX. HARRY P. FAIRCHILD, New York, N. Y. Application filed Nov. 21, 1889. Serial No. 331,104. Term of patent 3½ years.

418,767—MOLD FOR MAKING COMPOUND METAL INGOTS JOHN L. P. SPOONER, Providence, R. I. Filed May 25, 1889. Serial No. 312,034. (No model.)

419,084—MAKING INGOTS FOR PLATED WIRE. JOHN L. P. SPOONER, Providence, R. R. Filed May 25, 1889. Serial No. 312,033. (No model.)

419,085—SEAMLESS PLATED INGOT. JOHN L. P. SPOONER, Providence, R. I. Filed July 5, 1889. Serial No. 316,630. (No model.)

419,156—MACHINE FOR FORMING AND BENDING METAL. ISAAC S. MCGIEHAN, New York, N. Y, Filed Oct. 26, 1889. Serial No. 328,307. (No model.)

Issue of January 14, 1890.

419,206—SPIRAL-SCREW BUTTON. HENRY B. LUM, Red Bank, N. J. Filed April 16, 1889. Serial No 307,503. (No model.)

419,251—ROSETTE FOR JEWELRY. HERBERT E. GOFF, North Attleboro, Mass. Filed Aug. 31, 1889. Serial No. 322,537. (No model.)

419,376—CUFF HOLDER. MARCUS D. STRAIT, St. Louis, Mo. Filed Oct. 8, 1889. Serial No. 326,355. (No model.)

419,517—WATCH CASE SPRING. BARTON M. GREENE, Eckley, Ore., assignor of one-third to Robert W. Airey, same place. Filed May 15, 1889. Serial No. 310,876. (No model.)

419,525—DEVICE FOR SECURING DIALS TO WATCHES. FERDINAND F. IDE, Peoria, Ill. Filed July 12, 1889. Serial No. 317,259. (No model.)

419,552—WATCH BOW FASTENER. LOUIS PLATNAUER, Birmingham, England. Filed Dec. 11, 1888. Serial No. 293,264. (No model.) Patented in England Nov. 16, 1888, No. 16,626.

419,597—BRUSH. SETH W. BABBITT, Meriden, Conn., assignor to the Wilcox Silver Plate Company, same place. Filed May 14th, 1889. Serial No. 310,716. (No model,)

419,598—METHOD OF MAKING INGOTS FOR SEAMLESS PLATED WIRE. LEVI L. BURDON, Providence, R. I., assignor to the Burdon Seamless Filled Wire Company, same place. Filed June 28, 1889. Serial No. 315,895. (No model.)

419,605—COMBINED BACK FASTENER AND SUPPORT FOR MIRROR OR PICTURE FRAMES. LOUIS C. HILLER, Meriden, Conn., assignor to the Meriden Silver Plate Company, same place. Filed May 15, 1889. Serial No. 310,856. (No model.)

Issue of January 21, 1890.

Design Patent No. 19,589—WATCH CASE. THOMAS BENFIELD, Newark, N. J. Application filed Nov. 5, 1889. Serial No. 329,368. Term of patent 14 years.

Design Patent No. 19,591—PURSE. SHUBAEL COTTLE, New York, N. Y. Application filed Dec. 24, 1889. Serial No, 334,881. Term of patent 3½ years.

Trade Mark Patent No. 17,406—WATCH MOVEMENTS. AMERICAN WALTHAM WATCH COMPANY, Waltham, Mass. Application filed Nov. 25, 1889. Used since Jan. 1, 1885. "The words 'Bond St.'"

419,654—STEM-WINDING AND SETTING WATCH. BERNARD FRESE, Chicago, Ill. Filed Oct. 11, 1886. Serial No. 215,917. (No model.)

419,685—CLOCK. ALMERON M. LANE, Meriden, Conn. Filed Aug. 17, 1889. Serial No. 321,079. (No model.)

419,686—COMBINED CLOCK AND BELL. ALMERON M. LANE, Meriden, Conn. Filed Aug. 17, 1889. Serial No. 321,080. (No model.)

419,776—ELECTRICAL CLOCK. ANSEL P. JONES, Cleveland, O. Filed Jan. 17, 1887. Serial No. 224,646. (No model.)

420,006—CLOCK STRIKING MECHANISM. CARL BRAUN, Königsberg, Prussia, Germany, assignor to Frederick William Hoffman, Albany, N. Y. Filed Feb. 13, 1889. Serial No. 299,700. (Model.)

CLOCK DECORATION.

A BRIEF REVIEW OF THE ARTISTIC FEATURES OF CLOCKS FROM THEIR EARLIEST INTRODUCTION.

By Paul Tonnellier.

PART I.

PERIOD OF THE RENAISSANCE.

MY OBJECT is to pass in rapid review the principal styles of decoration applied to clocks, from the time of their first appearance as ornamental articles of furniture up to the present day. It struck me that an essay on that subject, accompanied with illustrations sufficiently varied and characteristic, might prove not only interesting but also useful. I am really surprised that a work of that kind should not have been attempted already, not briefly, as I am going to do it, but on a somewhat extensive scale. Materials are not wanting for anyone willing to take a little trouble to find them. In fact, they are so very abundant that it was no easy matter for me to make a good choice, and I must beg to be excused if I do not mention all ornamental clocks worthy of notice. Anxious to place before your eyes models which may be studied both from an artistic and an industrial point of view, I think it useless, for my purpose, to describe monumental clocks, such as those of Strasburg's Cathedral, of Saint Mark (Venice), etc. Full details about them are found in all treatises on horology; and, besides, each one of them has a style of its own, principally resulting from the harmonious arrangement of all the necessary parts. With them, the outside embellishments are, as a rule, more calculated to set off the science displayed in the making of the works than to provide for these an elegant shelter. I shall refrain also from describing hour glasses and clepsydras, as offering no interest whatever in the present case.

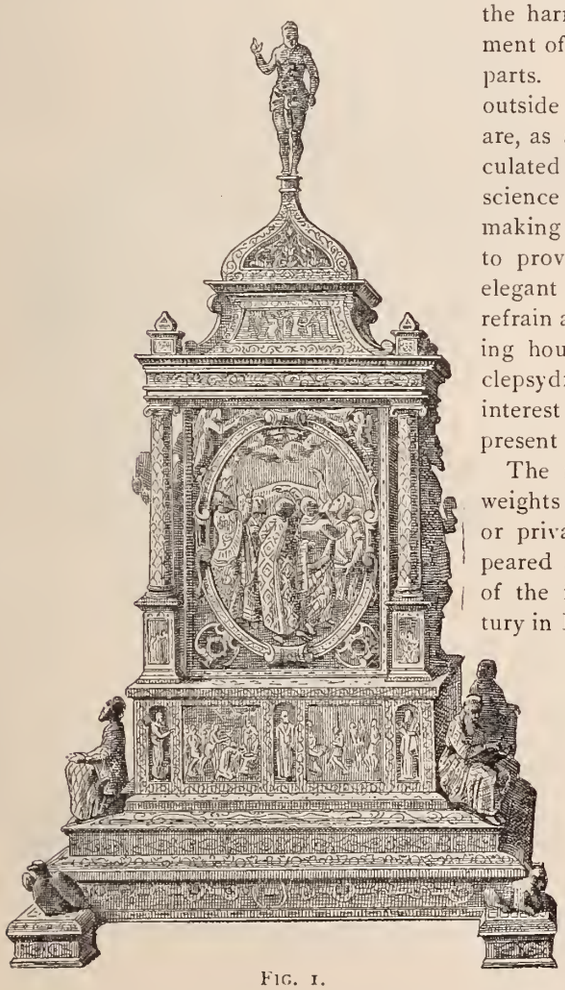


FIG. 1.

The first clocks with weights used in palaces or private houses appeared at the beginning of the fourteenth century in Italy, France and Germany They were at that time considered as an article of great luxury, only to be had by noblemen and wealthy *citadins*. By degrees they found their way into the cells of monks, the studies of scholars and the salons of bourgeois. These clocks were usually hung against the wall in bedrooms or dormitories. Sometimes they were placed on hollow stands, meant to hide the weights. In the inventory of Charles V., of France (1380), is mentioned a clock made entirely of silver, which had belonged to Philippe-le-Bel, who died in 1314. This elegant timepiece was the work of a skilful artisan from Wurtemberg. The invention of the spiral, which occurred at the beginning of the fifteenth century, at once gave birth to a new fashion in clocks, which were made very small, like the traveling

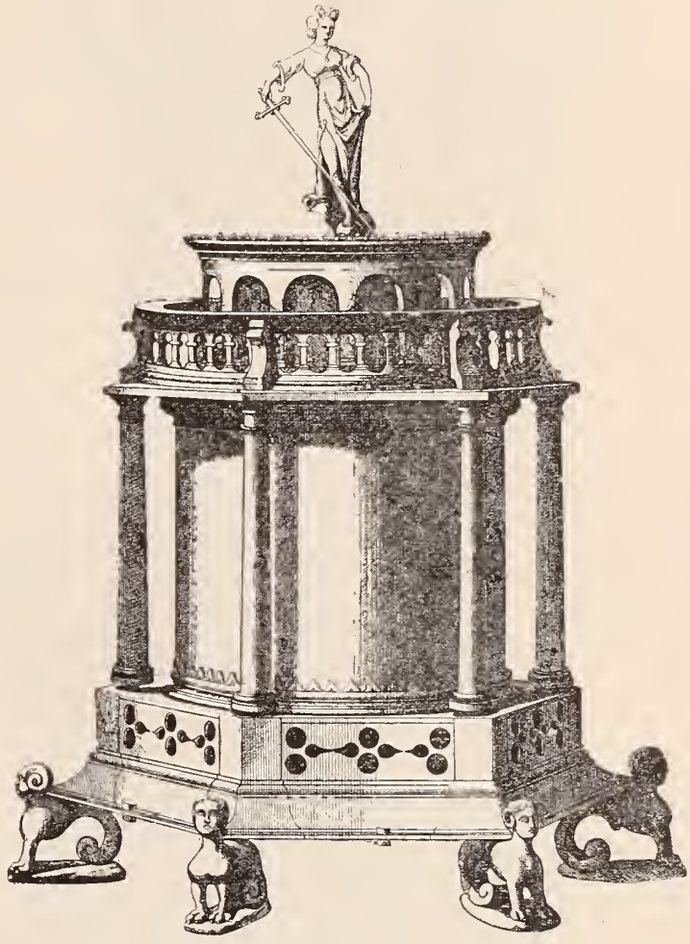


FIG. 2.

ones of to-day, and built in a very elegant style. Some preserved, in their ornaments, reminiscences of Gothic art; but most of them exhibited the chief architectural features of the Renaissance. A great many had elaborate inside works, and showed on their faces several dials.

Our fig. 1 represents a clock in damaskeened beaten iron, of the fifteenth century, belonging to M. de Bruges' collection. I only saw illustrations of it, but it seemed to me more elegant than any of the same period which I have really seen at the Cluny Museum or elsewhere Consequently I chose it for reproduction in preference to the others. Yet I am sorry it should have been examined neither by M. Pierre Dubois, the learned author of the *Histoire de l'Horlogerie* (published at Paris in 1849), nor by Paul Lacroix, who mentions it in the *Arts au Moyen-Age*, nor, in fact (to my knowledge), by any of those who have written on the subject. These various authors, who reproduce the same illustrations, briefly praise the beauty of the ornaments and figures, but in one of these books only, the *Merveilles de l'Horlogerie* (published at the beginning of 1888), we read

something about the dial, which is said to represent religious scenes, beautifully engraved. Now, I must confess that I do not see the dial. As shown in fig. 1, the face of the elegant case is occupied by a medallion containing several figures of high priests, lifting up their arms to heaven. They are grouped with much art, and the embroi-

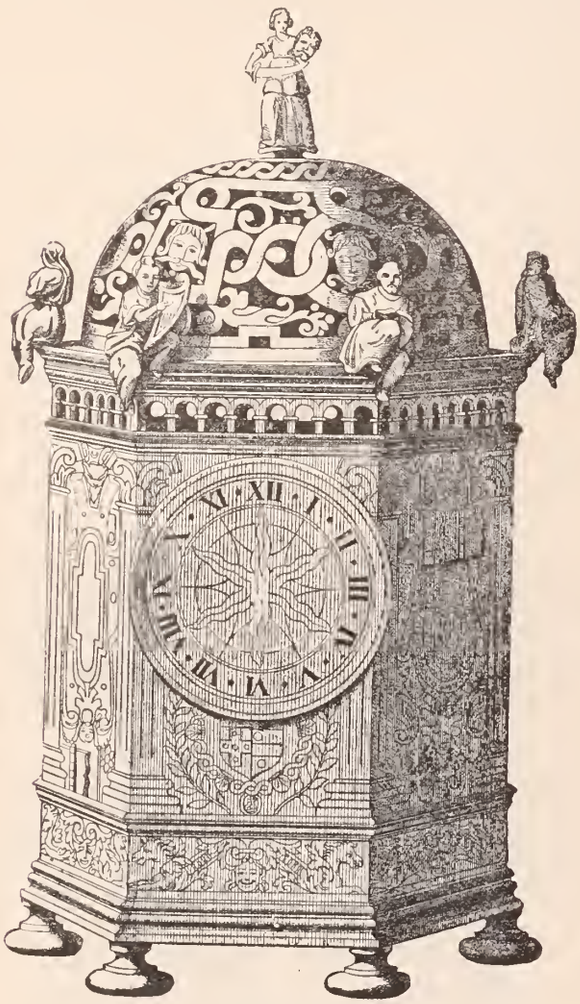


Fig. 3.

dery on their long robes is delicately rendered. The outlines, the columns, the mouldings, the statuettes, and all the details of this remarkable case, seem perfect; but, evidently, the dial must be hidden by the medallion acting as a cover, since the position of the figure at the top does not allow us to suppose that the dial may be on the other side. Unless we admit that the artist who made the first drawing (copied by all the others) reproduced, as more interesting at his own point of view, the opposite side to the dial, and, in order to give more harmony to the ensemble, altered the position of the top figure.

In the sixteenth century, the fashion for portable clocks underwent a still greater development, although it was, even then, considered as an article of unusual luxury, only fit for the great. In those times, kings and ambassadors were often presented with timepieces which, both inside and outside, were perfect masterpieces. The works were often very elaborate, and the cases exhibited a great variety of decoration. Many of these clocks were made, either in Germany, or in France or Italy, by German artisans. Yet, in most of them, the structure of the case, and even the style of ornaments, seem directly inspired by the Italian Renaissance.

The clock shown in fig. 2 looks like a little temple, adorned with six columns, supported by an equal number of chimeræ. At the top runs a balustrade surrounding a low and flat structure with arcades, on which stands a figure pointing the hours with a long sword. This emblematic weapon replaces, here, the hands, and the dial moves around. The arrangement is, no doubt, very original, but the owner of this clock must have found it rather awkward to tell the time.

The clock in fig. 3 is more massive in appearance. It is hexagonal in shape, and covered with etching. On the cornice are seated six figures, and a seventh one, Judith, holding the head of Holophernes, stands on the top of the cupola, elaborately adorned in open work.

The two following illustrations show us, I believe, the most remarkable specimens of clocks of that period. They are thoroughly different in appearance, and yet both equally artistic. These two interesting pieces occupy, at the Louvre, a prominent place in the Sauvageot collection. The first one (fig. 4), circular in shape, like a watch, is fixed on agraceful stand, resembling that of an elegant cup. On the center of the dial we see a medallion containing a figure emblematic of Geometry. A spirited hunting scene, representing a dash through fantastic foliage (the whole in open work), frames it. The case is surrounded by a silver circle with regular ornaments partly pierced. On the top stands a warrior holding a lance. The back is covered with rosaceæ in a kind of lace work. At the base of the case, in front, is engraved on a small piece of silver the date, 1598 The total height of this pretty piece is 25 centimeters.

The other clock (fig. 5), which is in gilt brass, seems to have been designed by one of the best architects of that period, during which artists of genius were so numerous in almost every part of Europe. Square in shape, it owes its refined character largely to the remarkable treatment of the upper parts. How light is that balustrade running along the terrace, and how gracefully rises the superstructure, which is crowned by a nine-faced dome all covered, as with scales of fish! The four heraldic lions placed at the angles of the balustrade hold the escutcheons of the Farnese, who were dukes of Parma, Plaisance and Castro, and great gonfaloniers of the church; this last title being simply honorary. On the top is a statuette of a man who carries a dolphin. The queer-looking figures which adorn the body of the clock evidently belong to a style different from that used in the upper parts. They seem like remnants of the Gothic period, especially those at the base, yet they by no means appear out of place. All the details of this pretty little building are well calculated to enhance the general effect, which is a most pleasant one. Above each one of the glass side faces, showing the works, is an inscription in German. The one on the left means: "With patience, I bear misery; all will be for the best if I am never discouraged;"



Fig. 4.

and the other one: "My name is Prudence (*Klugheit*). I can explain everything." On the back is engraved an image of Justice, holding a sword in one hand and a pair of scales in the other; underneath are two lines which mean: "With care and skill I accomplish all, and allow nothing to remain but what is just." A note from M. Sauvageot's hand states that, in 1848, the mainspring of this clock broke, which enabled him to see the date of 1680, whereas the barrel containing it was marked 1590. The latter can therefore be considered as its real date. This clock is 34 centimeters high.

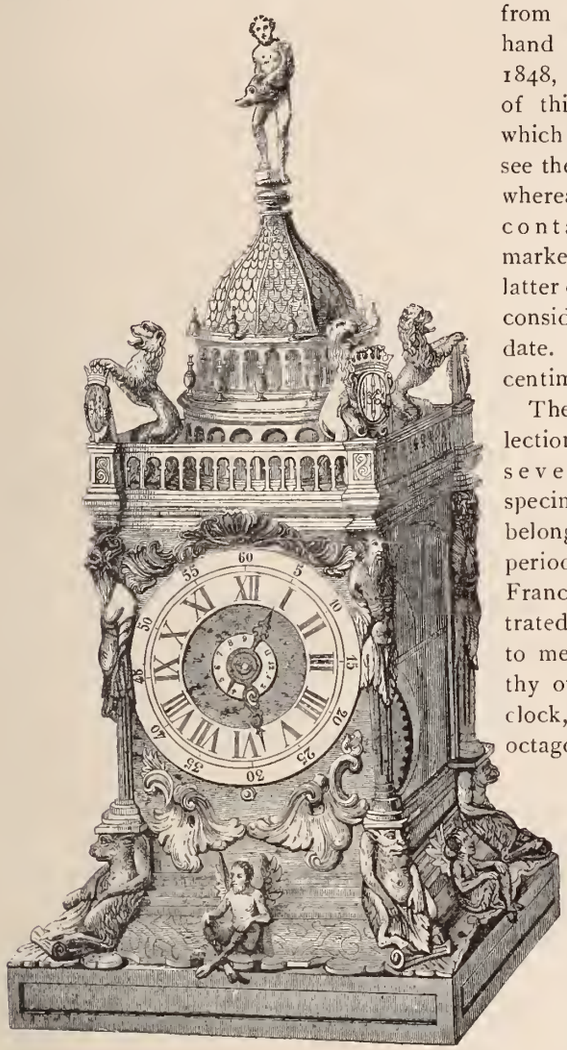


Fig. 5.

The Duthuit's collection also contains several interesting specimens of clocks, belonging to the same period, and made in France. The one illustrated in fig. 6 seems to me the most worthy of notice. This clock, in gilt brass, is octagonal in shape, and built in the style at once elegant and stately, flourishing in those times. All the faces, on the body and the base, are covered with a fine niello work, showing very elaborate, yet perfectly symmetrical interlacings. The top parts are adorned in relief and open work. All the figures are beautifully done, as though they had been executed by the best artists of the age. When we examine these clocks of the sixteenth century, on which so much time and skill have been spent to make them thoroughly artistic pieces, we become more and more convinced that wealthy people alone could afford to purchase them. Our belief is strengthened by the fact that among the authors who describe at length all the articles of furniture to be found in the house of a bourgeois in that period, none of them mentions clocks. Neither the *Menagier de Paris* nor the *Livre des Metiers* says anything about it. Gilles Corrozet, in his *Blasons Domestiques*, so full of information, is quite as reticent.

The clock, fig. 7 (Flemish), is of a very original pattern. Although it is built in a style absolutely different from the others, it does not seem to have been designed by an artist aiming at singularity. The outlines are graceful, and all the parts are well proportioned and appear indispensable to the full effect of the ensemble. The stand, resting on claws, is covered with ornaments in open work, and the body is made of a cylindrical glass, through which the works are seen. The caryatides, protecting it, are well chased, and the top part, supported by dolphins, rises elegantly, like a canopy, above the horizontal dial. The designer of this pretty clock had it in view, no doubt, to make a work of a light appearance; and, in spite of the massive shape of the case, he has succeeded marvellously well.

I might place before your eyes a great many other clocks of the sixteenth century, some of which, in the shape of a little tower rising on the forecastle of a small ship, or nave (nef), are very original; especially when there are tiny figures set in motion by a hidden mechanism. But I believe that I have given a sufficient idea of the variety of shapes and decorations to be found in timepieces of that period. Everybody knows about the stately one of Henry VIII, belonging to the Queen of England; and you may have heard also of that of Catherine de Medicis; this clock being chiefly remarkable on account of its elaborate works, sheltered by a rather simple case almost entirely made of rock crystal.

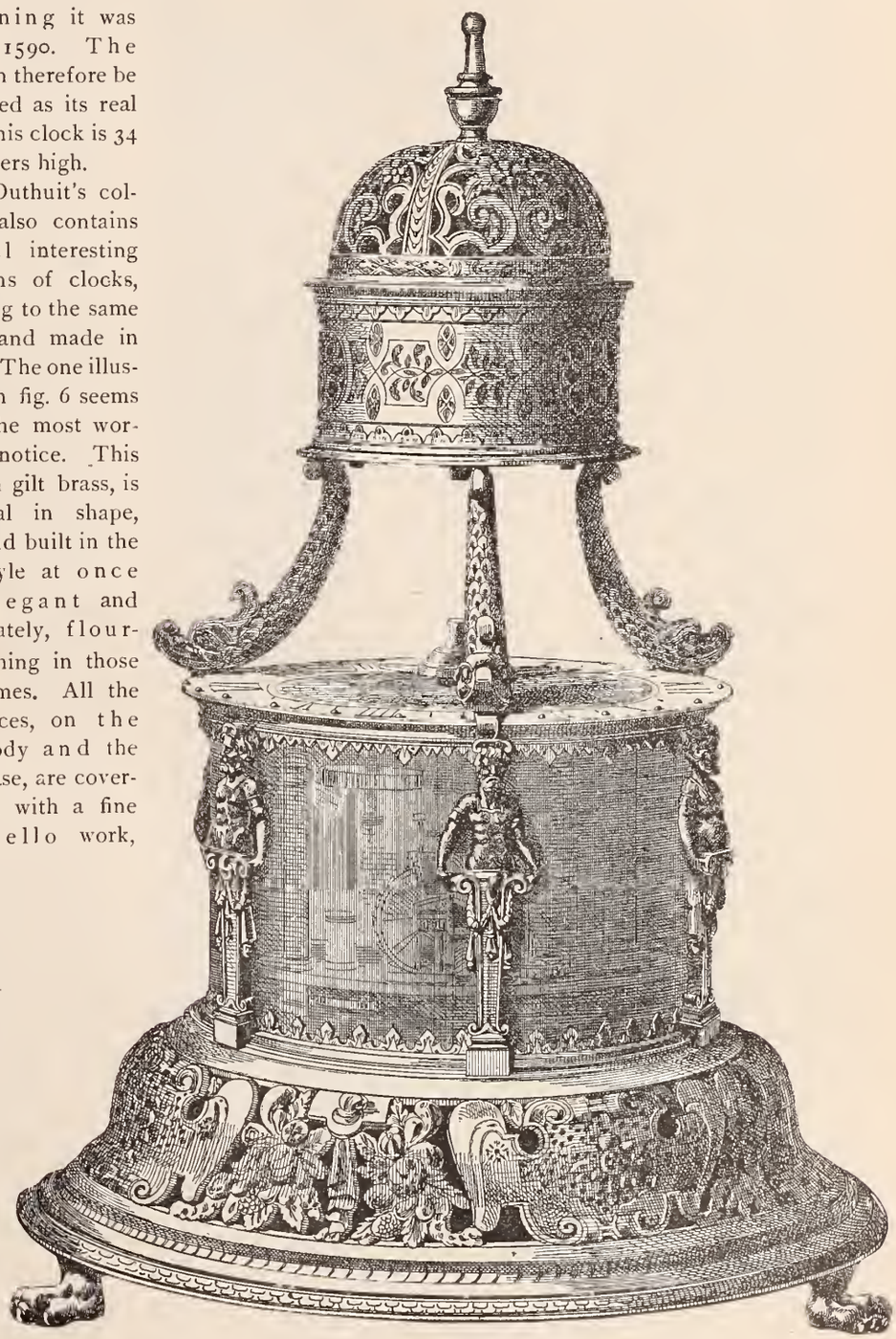


Fig. 7.

Before parting with the sixteenth century, I think I ought to mention to you the first astronomical clock, of comparatively small size

which was ever made. Previous to this, monumental clocks with an elaborate mechanism had been constructed in various parts of Europe by Walinfort and Jacques de Dondis, in the fourteenth century, and by Conrad Dazypodius, and Lyppyus, in the sixteenth. But, according to reliable records, none of the same description, as to the importance of the works, existed in a reduced size until Oronce Finée produced his, in 1553, in execution of an order he had received

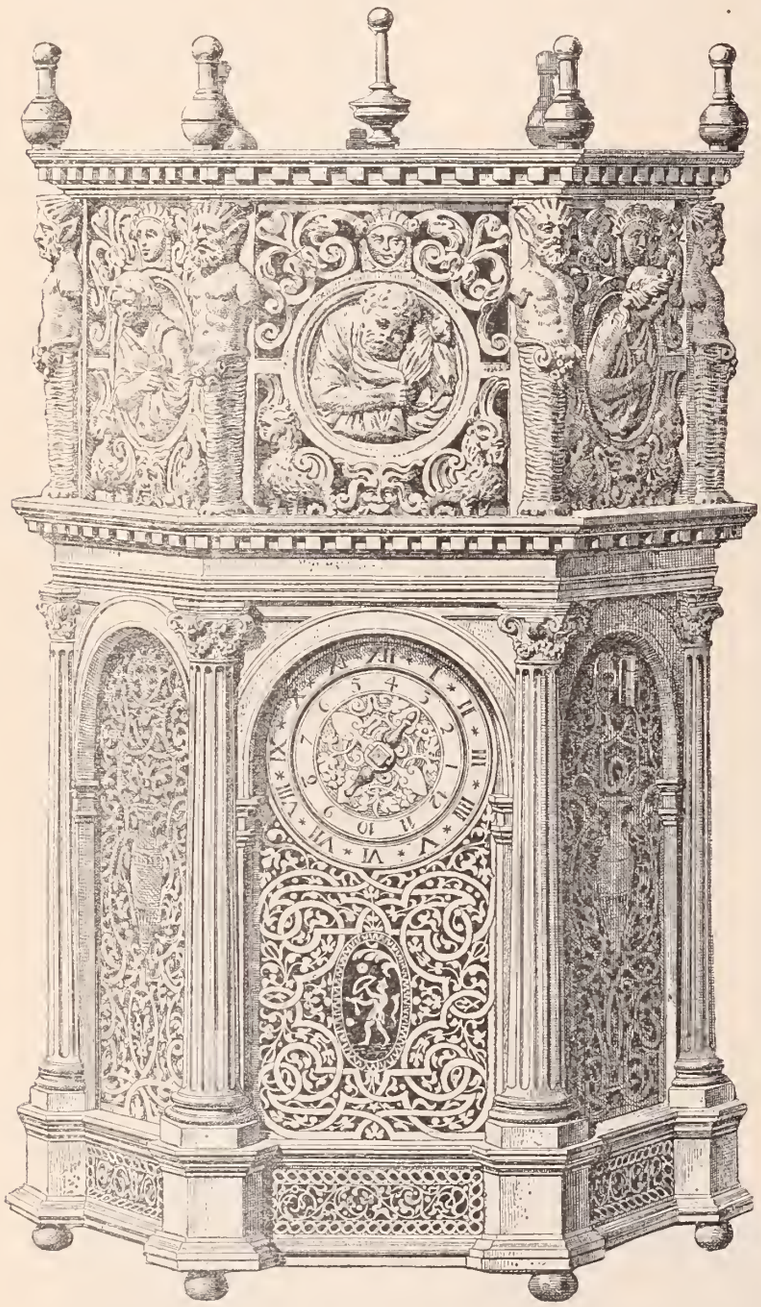


Fig. 6.

from the Cardinal de Lorraine. This clock, given by the Cardinal, when he was dying, to the Genovefin library, has been preserved and can be seen at the Bibliothèque Ste. Geneviève, Paris, in the center of the Administrateur's study. I will describe it at length in my next installment.

(*To be Continued.*)

Transparent Cement.—A transparent cement for porcelain is prepared by dissolving 75 parts of india rubber, cut into small pieces, in a bottle containing 60 parts chloroform; to this add 15 parts green mastic. Let the bottle stand in cold, until the ingredients have become thoroughly dissolved.

Ascertaining Longitude with the Chronometer.

THE NECESSITY of ascertaining the longitude at sea became imperative for European mariners after the discovery of the western hemisphere, and seamen, kosmographers, mathematicians and astronomers both proposed methods and were diligently studying devices to solve this intricate question; yet it required centuries until the problem was satisfactorily solved. It may be well said that the best talent of those ages grappled with the question. The Jewelers' Circular passes by the many geodesic, astronomical, and physical (magnetic) methods proposed; in order to at once commence with the methods intimately connected with the history of horology.

To take a cursory review of the principles underlying the subject. We know that, apparently, the sun passes around the earth once in twenty-four hours, and that therefore every place on the latter has a "noon" or meridian once during this time. Not all the localities of the earth, however, have this noon at the same time; those lying farther to the west have it later than those more to the east. Let us imagine the equator divided into 360 degrees, and dividing lines drawn from one pole to the other; through these points we thus obtain the longitudinal lines of the earth, the first of which may be chosen at pleasure: St. Petersburgh, Berlin, Greenwich, Paris, Washington, etc. Since, next, the sun passes through all the 360 lines in twenty-four hours, it results that it passes in one hour over fifteen, and a locality lying either to the east or west upon the fifteenth line (or, as it is more properly called, "degree") of longitude, will have its noon one hour earlier or later, so that when it is 12 o'clock or M. at the former place, it is only 11 at the latter. The principle is so very simple that a child can readily understand it.

This being premised, it is easy to determine from the difference of time the longitudinal difference of two localities. Let us suppose, for instance, that a timepiece, regulated according to Greenwich time, and which continues going with precision, is carried to a certain place at sea, the local time of which is 5 h. p. m.; our Greenwich timepiece, however, gives us 2 h., and we then know that the ship is distant from Greenwich 3 h. = 45°. While, next, the more eastern locality has its noon earlier than the more western, we can easily ascertain whether the former's time is a. m. or p. m.

The history of the timepiece or chronometer, and the various propositions made and methods previously used, belongs to the most interesting part of horology and has been ably treated by Prof. Eugene Gulcich, in his "History of Horology." He says that the first very valuable work, entitled: "Of the Longitudes," was written by Alonzo de Santa Cruz, and was dedicated to King Philipp II. This author spoke of six different methods of determining the longitude. In spite of all research, not a copy of the book can be found anywhere, and for this reason it is not known who proposed the present system of dividing the equator into sixty equal parts, or hour lines. The Spanish chroniclers believe that the book was written between the years 1520 and 1530. As time measurers, Santa Cruz proposed hour glasses, clepsydras, wheelwork actuated by weight, and even lamp wicks, saturated in oil, which consume very uniformly, when ignited. But it is said that Santa Cruz remarked at the end of his "proposed methods," that it would be very difficult to ascertain the longitude with any fair degree of precision by means of wheelwork.

To judge from various extracts of the work made by the Spanish chroniclers, it is generally believed that Santa Cruz was the author of the present method of determining the longitude. But about the same period, on the 15th of April, 1524, also another very famous kosmographer, the celebrated Don Hernando Colon,* a son of Christopher Columbus, delivered a written opinion to the Junta at Badajoz (convened for the purpose of determining whether the

*Colon is the Spanish of the name Columbus.

Spice Islands were Spanish or Portuguese property), in which he reviewed the different methods used for determining longitude. In the collection of all the voyages of discovering of the Spaniards, together with the documents referring thereto, by Navarrete, vol. IV., various memorials of similar purport by different kosmographers will be found, but Colon is the only one who proposes the obtaining by time. The contents of this method are about as follows in English translation :

"The longitude might be determined, if one possessed a means, a timepiece, in order to measure the hours and the quarters, together with fractional parts. If this timepiece were set to the time of the place of sailing, then a vessel, which sails to the east or west, could ascertain from the difference of the time aboard (meaning the local time.—Ed.) and the time indicated by the timepiece, the degree of longitude." That the observer, in the calculation of local time, must take into account the sun's declination, the latitude, etc., was also mentioned by Colon.

It is difficult, therefore, to determine whether Colon or Santa Cruz was the originator of this method, although it can be fairly well established by an approximately correct argumentation. In the Junta at Badajoz participated a number of prominent kosmographers of that age, not one of whom, however, made a proposition similar to that of Colon. If Santa Cruz had written his work before 1524, it is presumable that these scientific men had read and known it, and would have referred to it in their several written opinions. But since they did not, it may be concluded that Santa Cruz wrote his book at a later date. Beside these reasons the concluding paragraph of Alonzo, "that it would be advisable not to entertain the idea of determining the longitude by means of a timepiece," sounds more like a criticism of somebody else's method than that of reviewing his own. According to the fashion of those days, and in view of the great importance of a solution of the longitude problem, Alonzo would most certainly have enlarged almost *ad nauseum*, if it had been his own invention, in place of simply "pooh poohing" it. For these reasons Colon may, with a fair degree of probability be credited with being the originator of the idea.

In 1530, Gemma Frisius debated the same method for determining the longitude in his work "De principiis astronomial et cosmographiæ," (Antwerp, 1530). The fact is important that he speaks of mechanical timepieces, by which Gehler believes he meant the Nuremberg "eggs" to be used for the purpose.

Philipp III., who took a great interest in the Spanish marine, promised a reward of $10,000 to anyone who should propose a successful method of determining the longitude. The Dutch States in the beginning of the 17th century, on their part offered a sum of 30,000 Dutch florins for the same purpose.

The proposition of Gemma Frisius called forth the most diligent endeavors of mathematicians and astronomers of all nations, and as early as 1514 the German, Werner, afterward Orontius Finäus, proposed the employment of the lunar distances, which had already been mentioned by Apian, in 1495. The reward promised by Philipp III. attracted the greed of swindlers and pretenders of every sort who had until then been engaged in compounding the philosophers' stone, squaring the circle, or trying to devise ways and means for bolstering up the finances of some state. Many of them essayed to solve the problem, although the larger part barely understood the principles involved, and the pitiable royal kosmographers were compelled to at least apparently examine with great care the greatest absurdities, because very often these pretenders had secured the patronage of persons of high rank, whose intervention could not be slighted. The Spanish government disbursed large sums of money without securing the desired results.

Huyghens approached the subject from the horological standpoint. He believed that he might modify the pendulum clock composed by him in such a manner that it might be used at sea. Two such clocks could be placed at different places on board ship, and set according to the local time of the place of embarkation. He wrote a treatise in Dutch on this subject, a Latin translation of which is to be found in the first volume of his *Reliqua*. The *Philosophical Transactions*, 1665, as well as the works of that inventor, "Horologium oscillatorium," contain the results of a few experiments, instituted with these clocks by a Scotch captain, Holmes. It appears that Holmes, fitted out with two of them, sailed, in company with three other ships, from the west coast of Africa toward the West Indies. At the island St. Thomas he set the clocks and then sailed 700 miles westward. He next returned again east and sailed a few hundred miles in this direction. After a few days, the accompanying ships desired to obtain drinking water, and sought the West Indian Island, Barbadoes, which, according to their reckoning, was closest to them. But Holmes found with his clocks that he was about 30 miles from the Fire Island, which indeed was visible next morning. On the occasion of an expedition of the Duke of Beaufort to Candia, the longitude of several points in the Mediterranean was determined with fair precision.

Finally, however, Huygens himself came to the conclusion that no progress could be made in this direction, because he constantly sought to correct the evils arising from the use of his pendulum clock at sea.

Leipnitz, the great German philosopher and mathematician, very emphatically recommended the use of watches for the solution of the longitude problem. He advised the construction of watches with two balances, each with a balance spring, and which mutually influenced each other by means of a toothed wheel, in order to insure a greater uniformity of rate.

The Academy of Sciences of Paris had meanwhile received a fund from Count Meslay for the purpose of giving an annual prize for a useful invention made in the domain of ocean shipping. In 1720, this prize was offered for the invention of a device for making the rate of a pendulum clock on board ship regular. The offer of this prize, perhaps, caused Sully to bestow his attention upon the pendulum, because, in 1729, he submitted to that learned body a pendulum clock for use on ship board which was provided with a lever escapement. The experiments with it, instituted in Paris, were favorable, but those on board ship were still wanting. For this purpose, Sully went to Bordeaux, and tried the clocks with satisfactory results on board various vessels on the Garonne. The French ship captain, Radouay, however, was not content with these tests, and carried the clocks with him on an ocean voyage. These last results do not appear to have been up to Sully's expectations, because history says that he died from grief over these failures.

Sully was a native Englishman and pupil of the well-known watchmaker, Gratton. He occupied himself in his younger years with the solution of the longitude problem, and was for some time connected in his labors with Newton, who esteemed him higher. He visited Holland and Austria for this purpose, and in Vienna he found a protector in the person of Prince Eugene, and delivered several discourses to the Academy of Sciences there. Afterward he went to Paris with the Duke of Aremberg, and became acquainted with Leroy. He gradually managed to insure for himself the protection of the Duke of Orleans, and was dispatched by him to London to collect watchmakers, and start a watch factory near Paris; of which he became director for a short time subsequently. He soon lost this place however, and then started a second similiar institution in St. Germain, under the protection of Maréchal de Noailles. Both the factories did not continue long, partly by reason of political disturbances, and partly for want of money. For the manufacture of his marine clock, Sully received a pension of 600 livres, up to the day of his death, in 1728. He was a highly diligent worker, and contributed much toward developing the art of horology in France.

Another Englishman named Dudlay, proposed to use mercury clocks for determining the longitude, and two Germans took great trouble in constructing devices for embodying the proposition.

As has been stated repeatedly in these colums of The Jewelers'

CIRCULAR, the invention of the practical means for accomplishing the purpose was made by John Harrison, an Englishman, and it is therefore unnecessary to repeat the "oft told tale," beyond giving the preliminary steps which led to the invention. On July 4, 1714, the English Parliament resolved to appoint a Commission to investigate the subject of determining the longitude; among other scientists, Newton, Clarke and Whiston were members. Newton drew up a memorial in which he criticized the several methods both proposed and adopted, pointing out their inconsistencies and defects. He recommended to the government that a reward be offered for the purpose of instigating artists and other ingenious men to participate in the invention of some means for accomplishing the purpose, and his recommendation was warmly supported by Gen. Stanhope Walpole, the future Earl of Oxford, and accepted without debate. The bill was introduced in the 12th year of the reign of Queen Anne, and entitled: "An act for providing a public reward for such person or persons as shall discover means for obtaining longitude at sea." This act contained the provision that a commission composed of professional watchmakers be appointed to test the propositions and investigations delivered to them, and instigated by this offer. The prizes were: £10,000 for the inventor of a method of obtaining longitude within one degree of correctness on a voyage from the West Indies to England; £15,000 if correct within two-thirds of a degree, and £20,000 if correct within one-half degree.

Above recital is substantially the preliminary history of the chronometer; as stated, the detailed account describing the labors of Mr. Harrison, has in various forms been published in these columns, and need not at present be repeated, beyond the statement that John Harrison is the only mechanic entombed in Westminster Abbey. He was born in 1693 and buried in Hampton churchyard in 1776. The son of a carpenter, he devoted his life to the improvement of timekeepers, and just before his death, he received from the government the tardy recognition of his services £20,000, for producing a chromometer that would determine the longitude to half a degree. His timekeeper, which is now at Greenwich Observatory, has a vertical escapement driving a remontoire. It is in a silver case in the shape of a watch case, and is furnished with a going fusee and compensation curb. Harrison is also credited with the invention of the gridiron pendulum, though there is no doubt that Graham had some years before exposed with compensation pendulums composed of metal rods.

To Restore the Color of Gold.

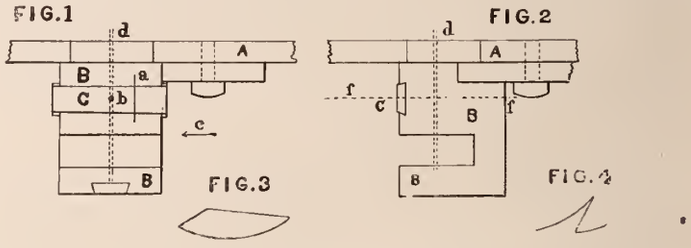
IT IS occasionally quite a trick to restore the color of gold after hard soldering. The simplest and easiest method is to expose all parts of the article to a uniform heat, allow the article to cool, then boil it until bright, in a pickle made with about one-eighth ounce of sulphuric acid to one ounce of rain water. Another way is to first pickle, then color. Anneal and boil in a pickle made of nitric acid and water, then again anneal black, and dip in coloring mixture made as follows: Put into the coloring pot, or a No. 10 black-lead crucible, 9 ozs. 12 dwts. of saltpetre and 4 ozs. 15 dwts. of table salt. Heat it up without water, then add hot water enough to make a thick paste; let it boil, add 6½ ozs. of muriatic acid and stir it up well. In using, keep up a quick and lively fire, and the mixture should boil up till it fills the crucible—which should have been previously well annealed to avoid breaking. The mixture removes more or less of the gold, and the operation should therefore be performed as quickly as possible. With good gold, one and one-half to two minutes will be long enough to expose it in the mixture. The article should be constantly stirred about, taking care not to let any of the surface get out of color, as the vapors will affect the work. Then rinse it in a pickle, dip in hot water, and dry thoroughly in hot sawdust. This color may be used with gold ranging between 12 and 20 karats fine, but the finest coloring can be got with about 15 karat gold. If not thoroughly dried, the work is liable to become spotted. Much practice is needed to be successful. Coloring is almost an art in itself, and there are many different ways employed by different jewelers, and the new beginner must not expect to be successful at once.

Advice to Watchmakers' Apprentices.

BY A MAN WHO HAS SPENT TWENTY YEARS AT THE BENCH.

TO RESUME our consideration of the verge escapement we will premise that this communication will be confined mostly to practical examination and repairs. When taking in a verge watch we can generally tell if the watchmaker has had much to do with it, by which I mean whether it has been tinkered and botched by your cheap workman. If it has, I advise taking it entirely down before giving an estimate on the cost of repairs. In having to do with verge watches of French make, with the exception of those giving evidence of being finely made and finished, my advice is to fight shy of them, as the depths are frequently so bad as to be well nigh hopeless. The French or Swiss verge can be readily distinguished by the counter-potance, as they invariably are pushed forward with a screw; and also the dove-tail slide is changed by a screw.

Just before and about the time American watches were introduced, the English lever was considered as the perfection of a pocket watch As a bait for the unwary, cheap verge watches were made abroad as near in the semblance of the English lever movement as possible, but the other cheap trash were worthless. Watches of this type should be left alone, as no amount of labor will make a certainty of their running. English verges can almost invariably be made to perform well with a moderate amount of repairs. We will commence with such a movement and go through with it from barrel to balance. After removing the mainspring and cleaning the arbor holes with pegwood, the barrel should be put together and tried, to see if the holes need closing or bushing, and also to see if the barrel runs true and free. The fusee chain should be examined to see if it has stiff, rusted spots in it; if it has, cover it with watch oil and let



it lie and soak an hour, and then run it around a piece of round wire in the bench vise, holding the chain by each end and imparting to it a sawing motion to give each link a turn as it comes around the vise. All the holes to the train should be examined for wear, and closed or bushed if such repairs are needed. Fusee and fusee click and ratchet should be looked to.

All such repairs, however, are so much like other watch repairing as to need no special comment, until we come to the contrate wheel. Usually, any slight change in depth with this wheel can best be effected by truing this wheel up or down so as to make the depth correct. Usually the great bother the inexperienced have with verge watches lies in the crown wheel and the escapement. We will suppose the watch we have in hand to be an English verge and the dove-tail slide to have the pivot hole worn too large. The remedy for this is to bush the hole in the dove-tail slide. At fig. 1 is shown a view of the potance (pronounced *po'-tance*) seen in the direction of the axis of the balance or crown wheel. The cut shown at fig. 2 is a side view of fig. 1, seen in the direction of the arrow *c*, fig. 1. The dove-tail slide is shown at *C*, figs. 1 and 2. In watches which have been running it is generally to be supposed that the dove-tail slide is in nearly the proper position; consequently, we will draw a knife across the dove-tail slide and make a mark, so we restore it to place after we have pushed it out and brushed it. The best way to bush one is to use the Swiss brushes which are imported already drilled. As the pivot is not a large one, we must be careful not to use one with a hole too large. The hole in the dove-tail slide should be enlarged so the bush can be fitted. Now, the safest plan is to soft

solder in the bush. After the bush is soldered in, it should be boiled in alcohol and chalk, to kill the acid. The slide is usually filed concave on the inner side with a small, round file to reduce the thickness. A pivot hole of this kind should usually be about 1½ or 2 diameters deep. Some workmen have an idea the face of the slide should be smoothed off to a nicety. In my opinion there is no use of this, but file the face off smooth and true; the shoulder of the balance wheel pivot, however, never touches the face of the dove-tail slide.

We should next true the teeth of the crown or balance wheel; this can be done by placing the wheel in a depthing tool and holding a small slip of Arkansas stone so that the teeth will lightly touch the ends against the stone as the wheel is revolved with the finger. The grinding should be slowly and carefully done until each tooth gives indications of being exactly of the same length. As this truing up of the crown wheel is a matter of vital importance, we can only say to follow strictly the advice just given, and go very slowly and carefully about it.

After the teeth are all brought to exactly the same length, they should be pointed with a crown wheel file; such a file is shaped in cross-section, as shown in fig. 3, only it is much magnified. The blade of such a file is about one inch long and scarcely ⅛ inch wide, with a square, smooth, steel handle about 5 inches long. In using such a file the straight side of the tooth is not touched; the concave side only is dressed up, keeping the old curvature of the teeth until a blunt point is restored; about the proper shape is shown at fig 4.

The follower in the counter-potance seldom needs anything done to it, as the wear is usually only to work the pivot at this place farther in. After the teeth are pointed as directed, the wheel should be put in place and the follower pushed forward as far as possible and leave any end shake to the pinion. We should now look downward through the hole in the top plate in the direction of the dotted line *d*, and see where the teeth of the crown wheel come. The rule among old watchmakers is that the tips of the teeth should come to the edge of the hole where the lower pivot of the verge goes. This will be found to be a little close, but the follower can be drawn back a very little, which will allow the escapement to act. To determine if the dove-tail slide is in the proper position, we place the verge and balance (without the hairspring) in the watch and screw on the cock; then remove the crown wheel and with an eye-glass sight through the hole where the follower goes, as near as we can judge, precisely in a line with the axis of the pinion of the crown wheel, to see if the pivot hole *b* in the dove-tail slide comes precisely opposite to the verge or corresponds to the line *d*, fig. 1. It is important that the verge should stand precisely at right angles to the top plate *A*, and that the axis of the crown wheel pinion, which corresponds to the line *f*, should be precisely parallel with it. These conditions are demanded if we wish to have the action of the crown wheel teeth alike on each pallet of the verge.

Those who are accustomed to work on verge watches will, when the crown wheel is in place, the verge in place, and the balance cock screwed on, by placing the end of the forefinger revolve the crown wheel and determine in this way almost perfectly the action of the escapement. We have now got to the verge, and if the pallets are badly worn and pitted we should put in a new verge. A peculiar fact asserts itself in regard to the verge escapement, namely, that those watches which were not jeweled in the pivot holes to the balance performed better, on an average, than those which were jeweled. The explanation is simple enough and lies in the fact that the frictions in position were more perfectly equalized in the brass bearings than in the jeweled holes. We will next consider how to put in a new verge.

A Good Substitute for Bronze.—Is made of 30 parts of good brass (35 parts of zinc, 65 parts of copper) and 4 parts of phosphor tin No. 0.

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Mechanical Ocular Defects.

Their Nature, Cause, Correction and Relations to Functional Nervous Diseases.

Edited by C A. Bucklin, A. M., M. D., New York.

[The aim of the author is to produce a clear and thoroughly practical course of instruction on the subject of "mechanical ocular defects," which is entirely void of useless technicalities and within the easy comprehension of every thinking student without his having had any previous technical or mathematical education.]

WE COMPLETED in our last a description of the various conditions necessary to satisfy in order that both eyes may become properly adjusted. These requirements were much more complicated when both eyes were considered than when simply monocular vision was under consideration. The relations which exist between accommodation and fixation are so intimately connected and so dependent on each other, that a disturbance between these functions is a very frequent cause of weak vision which is quite frequently overlooked. These difficulties are not appreciated by the average optician.

We have given a legitimate consideration to weak ocular muscles, and described the various tests necessary to determine their existence. The satisfactory correction of muscular defects is very difficult and very frequently impossible.

The two classes of cases we have considered under muscles are paralysis which allows one eye to deviate, and insufficiencies which permit of habitual binocular vision by severe exertion of the weakened muscle, which, becoming greatly fatigued, causes muscular asthenopia.

A new set of terms have sprung up in this connection which are quite generally understood, but which have not been recognized by any scientific body. The originator of these terms has very extreme ideas on the subject of ocular muscles, which, after several years of investigation, have completely failed to receive the concurrence of the ophthalmic world. These extreme ideas are advanced by Dr. Stevens, of this city, and although not recognized, have created considerable noise in the world. They are as follows:

"In this class of muscular faults, binocular vision is maintained by the expenditure of a greater amount of force than is required when the ocular muscles are in a state of perfect equilibrium. The visual lines are habitually held in such relations as to extend from the point of fixation to the yellow spot of the retina, but only by persistent and special effort. The tendency is for the visual lines to wander apart Such tendencies are grouped under the name 'Heterophoria' (meaning a different tending in the direction of the visual lines). This term is identical with our old term 'muscular insufficiency.'"

When the eyes are directed at *distant* objects situated directly in front of a person the visual lines are practically parallel, and in this position there should be the minimum of strain on the ocular muscles. If this is the case, the ocular muscles are said to be in a state of equilibrium, and in all other adjustments the changes of relations required are made with the least expenditure of effort consistent with the action.

When the muscles are normal in their adjustment this condition orthophoria (right tending).

Heterophoria express a tendency to deviate in any direction. This is divided into—

Esophoria—a tendency of the visual lines inward.

Exophoria—a tendency of the visual lines outward.

Hyperphoria (right or left)—a tendency of the right or left visual line in a direction above his fellow.

Tendencies to deviation in an oblique direction may be expressed by combining these terms, hyper-esophoria, a tending upward and inward, and hyper-exophoria, a tending upward and outward. The

designation "right" or "left" must be applied to these terms.

Having gone over these terms which are entirely new and simply represent the same condition as muscular insufficiency in this, that or the other muscle, we will next consider the method of discovering these faulty tendencies. The person to be examined is seated with the head erect, and the face is turned *squarely* toward the object to be observed.

The object used should be luminous and have a dark background; a lighted candle at twenty feet, as nearly level with the eye as possible, is used. If any error of refraction exist it should be corrected with appropriate glasses, under these circumstances of normal muscular exertion. This condition is named "*orthophoria.*"

Orthophoria or heterophoria may now be determined by means of prisms in the following manner: First, a prism sufficiently strong to produce diplopia or double vision is placed with its base in before one of the eyes. The two images will be homonymous, that is ,the image seen with the right eye will be to the right, and the image seen with the left eye will be to the left. If the two images are seen in exactly the same horizontal plane, no vertical deviation is present If one of the images rises higher than the other, there is absence of muscular equilibrium in the vertical direction, and this condition is called hyperphoria.

The eye seeing the lower object is the eye which is afflicted with the hyperphoria. The degree of prism base up before one eye or down before the other eye, which brings the two lights to the same level, represents the degree of the hyperphoria. If correcting lenses are worn during the muscular test, great care must be observed not to have them so decentered that they act as prisms. The test for hyperphoria is the first one made.

Next double vision is produced by placing a prism of 7° base up or down. If the two images are seen in the same vertical line after a few minutes, no horizontal deviating tendency is present. If the images are not in the same vertical line, then esophoria or exophoria exists. If the image seen with the right eye is to the right then the tendency is homonymous and esophoria exists. If the image seen with the right eye is seen to the left, the tendencies of the visual lines are to cross and exophoria is present.

If in making this test the abse of the prism is placed with its base down before the righteye, the upper image will be the one seen by the right eye. From this you can judge of the direction the visual line of the right eye tends.

Exophoria exists when the diplopia is crossed.

Esophoria exists when the diplopia is homonymous.

The degree of prism base in or out before one eye which is necessary to bring the two images to a vertical line represents the degree of esophoria or exophoria.

Having determined the deviating tendencies by the methods above described, similar tests may be made at the reading distance. In these tests the method of Graefe is most conveniently employed. On a card a fine straight line is drawn through a dot. Diplopia is produced as before, although stronger prisms are usually required to produce diplopia than were required at the distance. The position of the ball is now observed in testing for heterophoria in the same manner as the candle was used at twenty feet.

As a confirmatory test the author recommends determining the amount of prism each set of muscles can overcome at the distance without producing diplopia, after the manner already described in testing muscles.

Hyperphoria is that condition where with the ability to maintain binocular vision there is a constant tendency for one visual line to wander above its fellow, which tendency is overcome by a constant muscular struggle.

In strabismus there is an actual turning of the axis of one eye above the fellow eye, and it differs, according to Dr. Stevens, from hyperphoria in the absence of ability to maintain single vision. As a fact, however, a large per cent of persons having vertical strabismus do not have double vision.

Hyperphoria indicates a weakness of one of the vertical muscles; although the trouble be slight it is much more active in producing weak vision than a much greater amount of defect in any of the other muscles.

Hyperphoria frequently so tires the individual that he will not make any effort wilh his internal recti to fix at the reading distance. The muscle refuses to act because no relief is obtained from the annoying symptoms when the most energetic efforts are put forth to produce binocular fixation. Hyperphoria is best treated by a tenotomy of the vertical muscle which forces the eye out of place.

Persons having epilepsy and chronic chorea have errors of refraction quite as frequently as other individuals, by which the diseased persons are more annoyed than the healthy individual; consequently the relief gained by the correction of the error of refraction is more keenly appreciated.

The muscular power of this class of patients being greatly reduced they cannot overcome existing errors of refraction so easily as healthy individuals. Neither can they meet the muscular requirements of binocular vision so readily owing to the weakened condition of their muscular systems.

Upon these facts a great theory has been constructed, namely, that epilepsia and chorea are caused by faulty conditions in the adjustment of both eyes, and it has been proposed to treat these severe diseases by means of ocular treatment alone. Our readers will observe that at this point the treatment of ocular defects is branching out into a very extended field. It certainly is a fact that many nervous conditions, chronic headache and dizziness have been entirely relieved by proper glasses.

It had, however, become quite generally noised about that epilepsy was being cured on every hand by men who treated the disease by means of ocular treatment alone. The New York Neurological Society requested the enthusiastic exponent of these ideas to read a paper before the society expressive of his views.

He did so, and claimed a cure for fifty per cent. of the cases of epilepsy that he had treated by the ocular treatment. This statement so astonished the Neurological Society that they made arrangements to have him, under the observation of a joint commission appointed by the society, and the person making these wonderful claims treat such cases of epilepsy and chorea as the society should submit for treatment.

The result of the commission's work after two and one-half years was that as a means of treating epilepsy and chorea they had not been able to convince themselves ,that the treatment had been of any particular value in a single case submitted by the commission.

The names of the January class of optics are as follews: Wm. V. Blair, Meriden, Conn.; A. Lincoln Phillips, Jamestown, N. Y.; Wilson Cutter, Trenton, N. J.; Geo. Metzger, Jr., Emporium, Pa.; Rese B. Oberteuffer, Ridgefield, N. J.; Wm. W. Howe, Phœnixville, Pa.

A class in optics will probably form February 13. Those desiring a place will please apply early.

Soldering a Ring with a Jewel.—In order to prevent the bursting of the jewels of a ring, when soldering the latter for repairs, take a juicy potato, cut it into halves, make a hollow in both portions in which that part of the ring with the jewels fits exactly, so that that part of the ring to be soldered protrudes. Then wrap the jeweled portion in fine silk paper, place it in the hollow, and bind up the closed potato with binding wire. Now, solder with easily-flowing gold solder—not upon a coal, but by holding the potato in the hand. Another good way to do the same job is to fill a small crucible with wet sand, bury that part of the ring with jewels in the sand, and then solder.



Fig. 1.—⅔ Size.



Fig. 4.

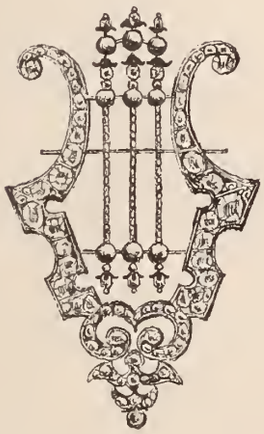


Fig. 3.



Fig. 2.

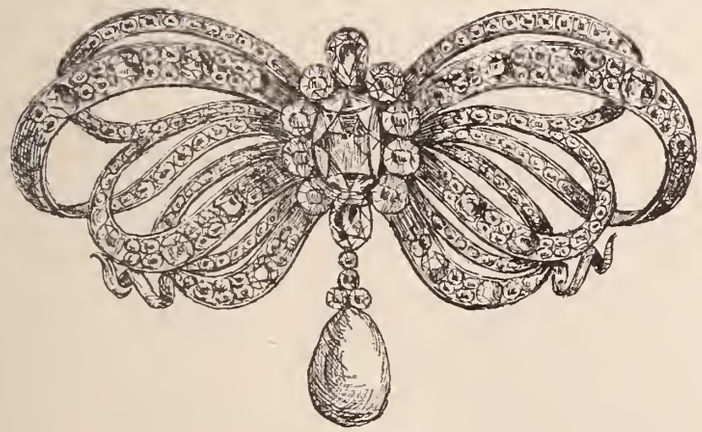


Fig. 5.

Parisian Novelties.

DIAMOND SPRAYS of flowers occupy a prominent place in the displays of our best jewelers. Our fig. 1 reproduces a lovely piece of jewelry representing a diamond branch of almond tree. The curves of the petals and all the details, even those of the stalk, have been most skillfully copied from nature.

Our fig. 2 represents a diamond necklace whose center piece is a chimera of a grand style. There is about it something strikingly original; yet the effect is very severe, and for that reason has attracted many of our aristocratic ladies. It is exhibited at a well-known place in a fashionable part of Paris.

A lyre-shaped diamond brooch is very pretty, and still more so with a tasteful introduction of pearls, as exhibited by our fig. 3.

The bracelet represented by the fig. 4 is of a style much worn at the present moment. It is entirely made of diamonds, with the exception of the center stone which is either a ruby or a sapphire.

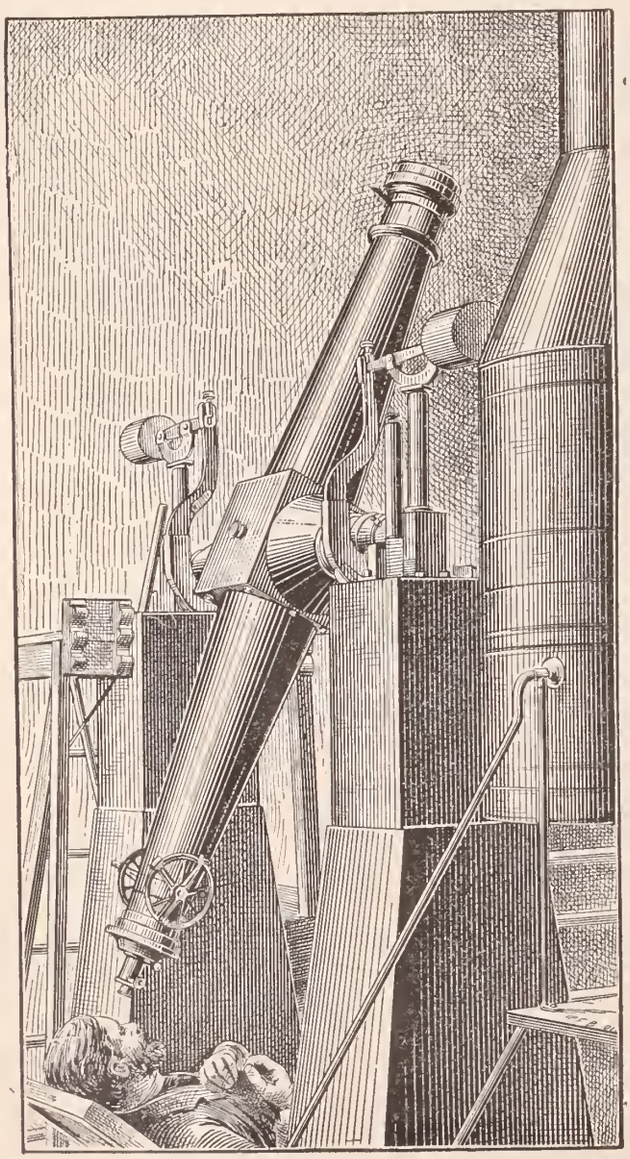
Our fig. 5 reproduces a free imitation of Gilles Légaré's *noeud papillon* (Butterfly Knot). It makes a pretty diamond brooch with a pear-shaped pearl as a pendant. This style is very taking, just now.

U. S. GOVERNMENT SYSTEM OF OBSERVATORY TIME.*

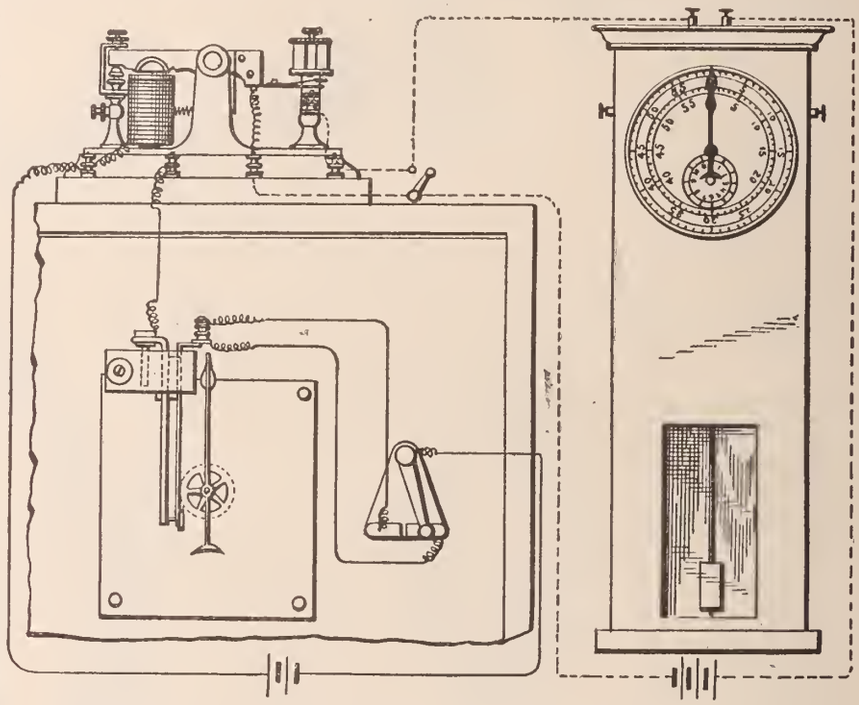
By Lieut. Hiero Taylor, U. S. Navy (*In charge of the Government Time Service*).

As THE revolution of the earth upon its axis is uniform, it might be assumed that the intervals between successive transits of a fixed point in the heavens over the same meridian would be equal. This assumption would be true were it not for the fact that the earth's axis changes its direction, changing thereby the length of these intervals. The effect is greatest for points near the poles of the heavens and least for those near the equator. For the exact measurement of time, therefore, the transit of a point on the equator should be used to mark the beginning of the unit, or in other words, serve as a starting point. The vernal equinox, the point where the sun crosses the equator in passing from the south to the north side, is used for this purpose. This point, however, cannot be said to be a fixed point on the equator, for it has a very slight motion to the westward. The combined effects of this motion and of the change in direction of the earth's axis are so nearly equal for successive transits that the variations in the intervals are insignificant and are ignored.

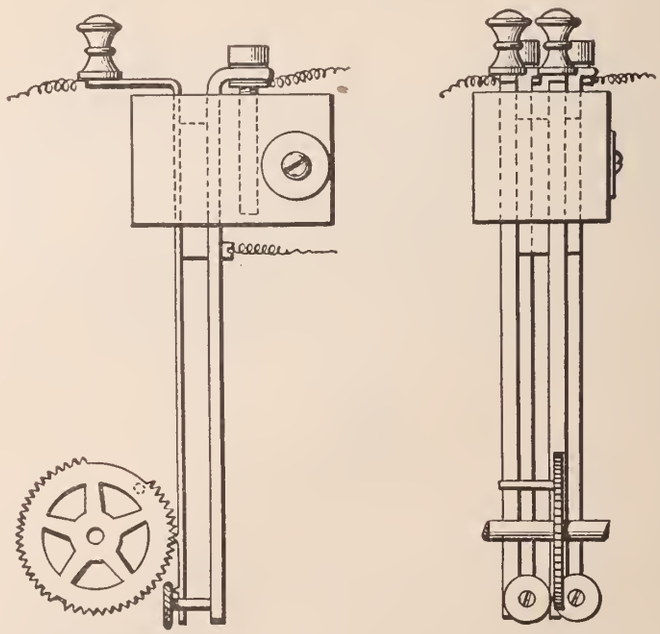
The instant the vernal equinox passes the upper meridian of a place it marks o h. o m. o s. of sidereal time for that place, and the time which elapses before the equinox again crosses that point is a sidereal day. In practice the true sidereal time is determined by observing the transits of stars. The American ephemeris gives, under the name of right ascension, the sidereal times of the transits of a large number of stars for the meridian of Washington. If, then, the clock time of a star's transit is noted by a clock regulated to sidereal time, and is compared with the star's right ascension, as taken from the tables in the Ephemeris, the error of the clock, *i. e.*, the amount it is fast or slow is found. Having the error of a sidereal clock, the error of a clock regulated to keep solar time is readily determined by a comparison of the two clocks.



Transit Instrument.



Transmitting Clock with Telegraphic Connection and Correcting Clock in Circuit.



Side and Front Views of the Circuit-breaking Spring and Wheel for Transmitting the Primary and Correcting Signals.

Solar time, as the name implies, is measured by the sun's transits. The interval between two successive transits of the sun is a solar day. These days are unequal in length, because the motion of the earth about the sun gives the latter an apparent motion amongst the stars

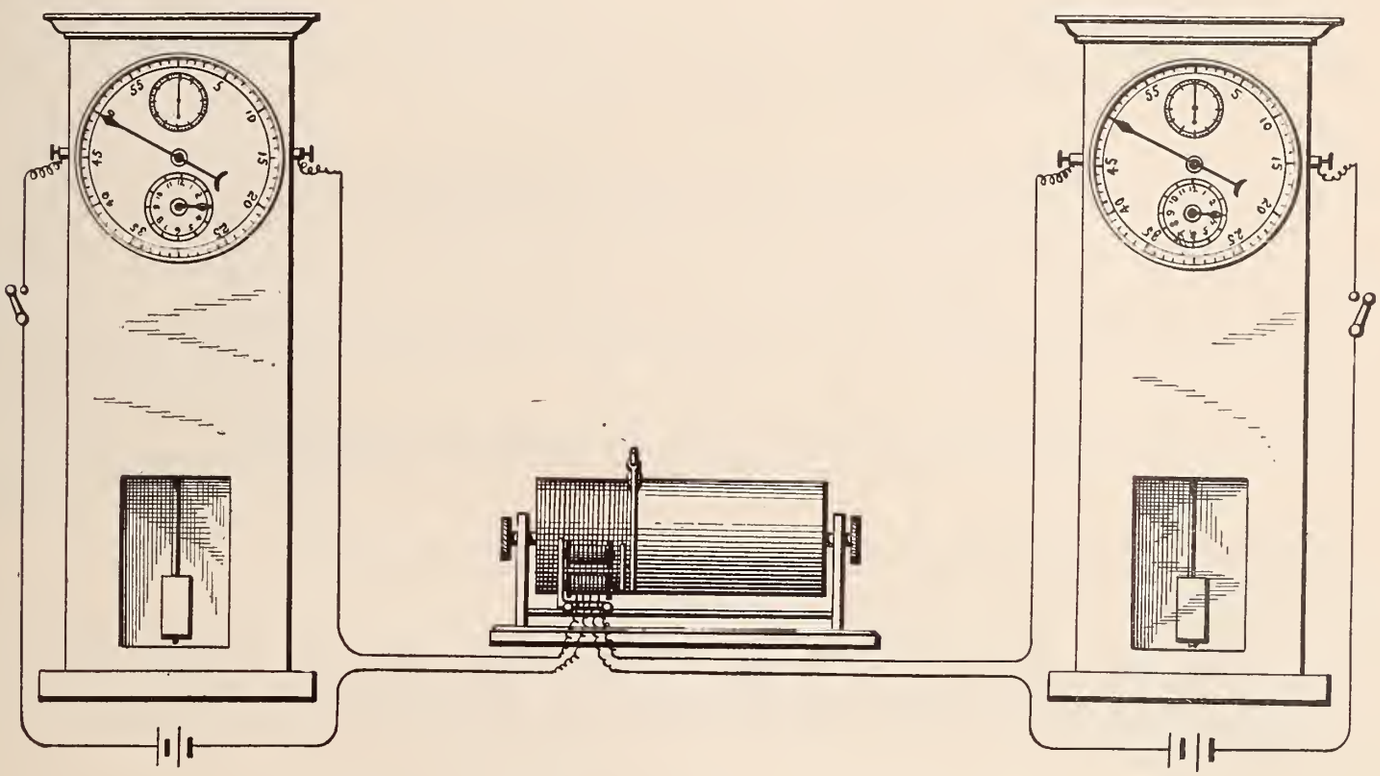
* Copyright by Jewelers' Circular Pub. Co., 1892.

which varies, it being greatest about January 1 when the earth is nearest the sun, and least about July 2 when the earth has reached its greatest distance from the sun. This irregularity makes it necessary to use a fictitious sun which moves on the equator with a uniform rate equal to the average rate of the true sun in the ecliptic. The time measured by this sun is uniform in its increase, and is called mean time. The standard clock at the Naval Observatory is regulated to keep this time.

From what is said above it is evident that to determine the mean time it is necessary to have a telescope and two astronomical clocks. The telescope used at the Naval Observatory is a fixed transit instrument, in the field of which are placed several groups of so called wires, though they are in reality spider webs. Every clear night a group of stars which cross the meridian in quick succession are observed. The sidereal clock times of the transits are recorded by an electric chronograph, which consists essentially of a cylinder revolved once a minute by a clock work mechanism, its speed being made uniform by a governor. By the use of a pen, which is itself slowly moved by the mechanism in the direction of the length of the cylinder, a spiral line is drawn upon a sheet of paper placed around the cylinder. The pen is at the end of an arm attached to the armature of an electro-magnet. The clock records its seconds' beats automatically by closing an electric circuit at each oscillation of the pendulum. The times of the stars' passages over the wires of the telescope are noted by a key in the hands of the observer. If the circuit were not closed by either clock or key the spiral line would be unbroken, but if the circuit be closed by either, the pen is drawn to one side by the armature and a break is made in the line. The mean of the times thus recorded for each star, corrected for small instrumental errors, is the clock time of the star's transit. The difference between this clock time and the star's right ascension is the error of the clock. In a like manner the error is determined from each star used, and the mean of all the errors is taken as the error of the clock at the mean of the times of the different transits. It is rare that these separate errors vary amongst themselves more than from 0.05 to 0.10 of a second.

The error of the mean time clock is found by a comparison with the sidereal clock. This comparison is made automatically by using a chronograph, both clocks recording their beats as explained before. The sidereal time of the instant of comparison is found by applying to the sidereal clock time the error of the sidereal clock. The difference between this time and the sidereal time of mean noon (tabulated in the Ephemeris) gives the interval from noon reckoned in sidereal time. As the solar day is about four minutes longer than the sidereal day, this interval of sidereal time must be reduced by a proportional amount to get its length reckoned in mean time. The result would be, if the mean time clock were correct, the same as the time of the instant of comparison as recorded by it. If not the same, the mean time clock is fast or slow, as the case may be, determined by the amount of the difference.

These clocks are very fine quality, as near perfection as possible, and are carefully compensated for changes of temperature. Nevertheless, their rates are affected by changes of temperature and by the density of the atmosphere. The changes in the latter have a more marked effect upon the clocks than the former. A careful record is kept of the rates of the clocks and the corresponding temperatures and densities of atmosphere. These records form a basis for estimating the changes of the rates of the clocks when, on account of cloudy weather, it is impossible to determine their errors by star observations.



Mean Time and Transmitting Clocks, showing Clock and Chronograph Connections.

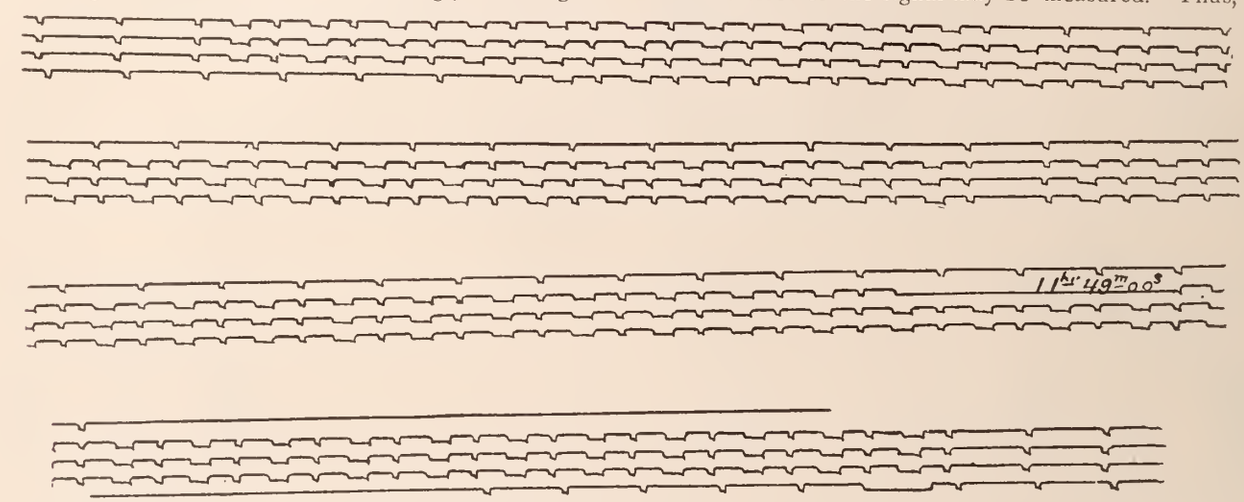
The primary objects of these careful determinations of the true time was to give the government a standard time for use in testing and rating the many chronometers it requires for its war vessels. As demands, first for time balls and then for uniform standard time were developed, it was natural that the public should look to its great government institution at Washington to meet them. There were already established the necessary valuable instruments and astronomical clocks for the determination of true time; there also was its corps of officials skilled in the uses of these instruments. Thus but little was needed to enable the Observatory to give to the public the results of its observations for correct time.

The method by which the true time is distributed is one of the most interesting features of the Naval Observatory. In this work a third clock, known as the transmitter, is used. It is in all respects similar to the others, except that it has a small toothed wheel on the seconds hand pinion which opens an electric circuit as each tooth passes a small spring which keeps it closed. The teeth corresponding to the 29th, 55th 56th, 57th, 58th and 59th seconds are omitted, so that as the clock makes these beats the circuit remains closed and

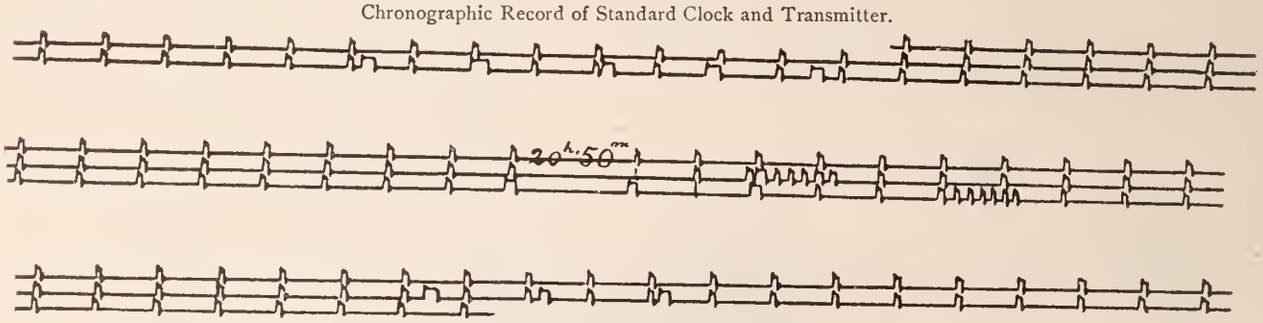
no signal goes out. By moving a switch the current may be made to pass through a second spring which is pushed aside only at the end of each minute. The armature of an electro-magnet which is in the circuit is released each time the circuit is opened, and by the action of a spring, when so released, it closes two other circuits. One of these circuits is used for the Washington time ball, the other goes to the instrument cases where it actuates an eight-point telegraphic repeater. The points of this repeater in turn close the main line circuits of the Western Union Telegraph Co., the Washington fire alarm circuit and that of the Observatory clock line. The latter line is used to set to correct time several hundred clocks which have been placed in the government offices and buildings, including the White House and the Capitol—ordinary clocks with the addition of a simple mechanical device operated by electricity, by which they may be corrected when they have gone astray.

Since the general adoption of standard time, the time of noon by the 75th meridian time has been sent out from the Observatory. A few minutes before noon the transmitter is compared with the standard clock on a chronograph and the amount of its error determined. It is then set exactly right by gently touching the pendulum with the finger, making the clock gain or lose, as is necessary, by accelerating or retarding the pendulum. At 11–56–45 A. M., everything being in readiness, the transmitter is switched in and the signals are transmitted to all parts of the country, being heard in every telegraph office through which they pass. The small toothed wheel, which omits the 29th, 55th, etc., seconds each minute, is in operation until 11–59–50 A. M., which is the last signal by it. Then to give opportunity for switching in the time ball and clock circuits the clock switch is moved to the other point and no more signals go out until the instant of noon, when a signal lasting for about a full second is sent. This long signal is necessary to insure the working of the electro-magnets which drop the time balls and correct the clocks. While the signals are leaving the Observatory, both the transmitter and the standard clocks are recording their beats upon a chronograph, a record which is preserved so that at any future time the error of the signal may be measured. Thus, every day at noon, the clocks in the government offices are set to accurate time; time balls are dropped at Boston, Newport, Wood's Holl, New York, Philadelphia, Baltimore, Washington, Fortress Monroe, Savannah and New Orleans; the numerous offices of the Western Union Telegraph Co. are furnished correct time, and many thousands of miles of railways are given the signal over their lines. The whole operation is done automatically, except the closing of the circuits, which is performed by the officer in charge of the service.

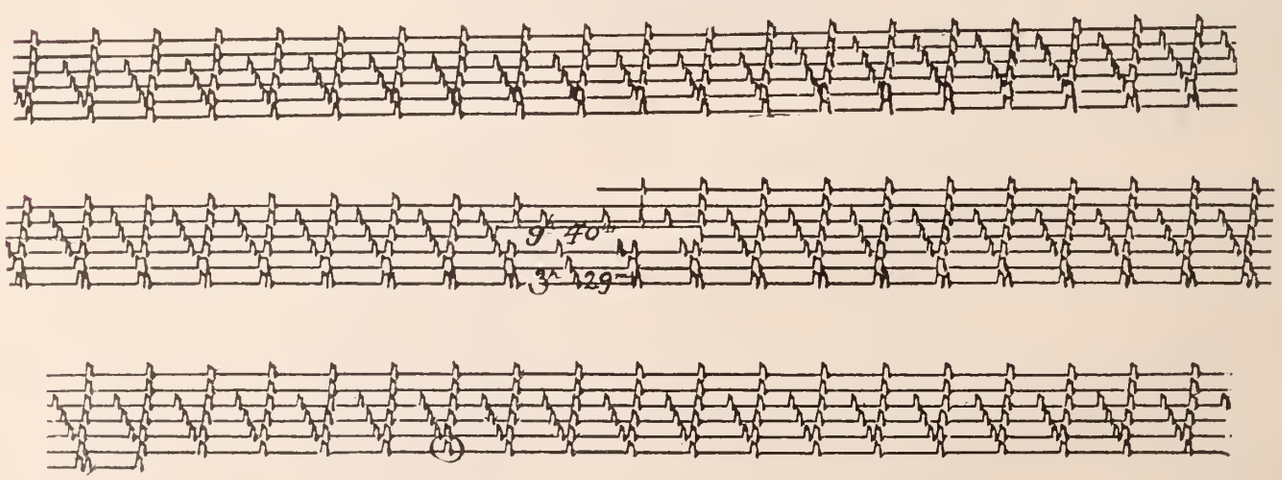
The system is capable of indefinite extension, for it is only necessary to multiply the well-known devices used for repeating telegraphic messages to accomplish it. Clocks in San Francisco may be set from Washington, and the error due to the time lost in the



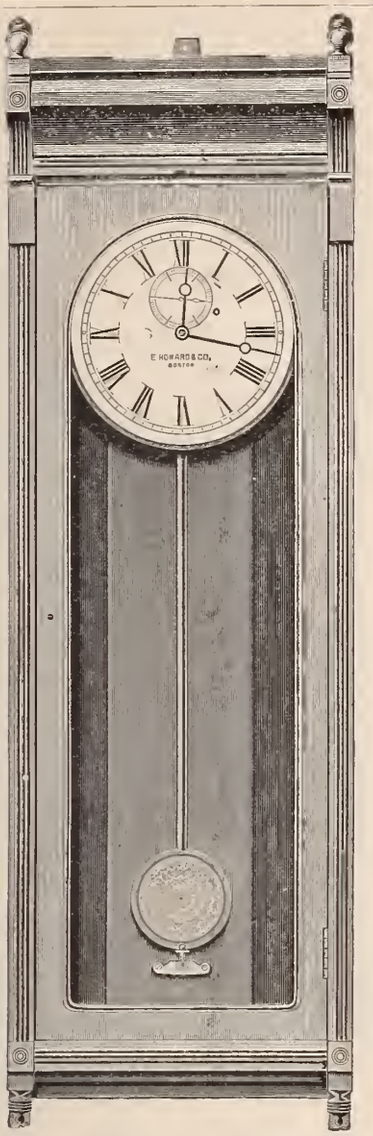
Chronographic Record of Standard Clock and Transmitter.



Chronographic Record of the Observation of a Star.



Chronographic Comparison of a Mean Time Clock with a Siderial Clock.



STANDARD REGULATOR

MADE FOR

THE ERIE RAILROAD COMPANY

BY

The E. Howard Watch and Clock Co.

The Erie Railroad Company have adopted this Clock for furnishing Standard Time at their principal stations.

They have **over One Hundred** of them now in use.

The following is the rating of the Standard Clock at the Attica (N. Y.) Station, as furnished by Station Agent Moon to the General Superintendent of the road:

MONTH OF DECEMBER, 1889.

1st	Sunday	7th	O K	13th	O K	19th	1 sec.	25th	O K
2d	O K	8th	Sunday	14th	O K	20th	1 sec.	26th	O K
3d	O K	9th	O K	15th	Sunday	21st	2 sec.	27th	O K
4th	O K	10th	O K	16th	O K	22d	Sunday	28th	1 sec.
5th	O K	11th	O K	17th	O K	23d	set	29th	Sunday
6th	O K	12th	O K	18th	O K	24th	O K	30th	1 sec.
								31st	set.

THE CELEBRATED

HOWARD WATCH

IS MADE IN

HIGH GRADES ONLY.



18 SIZE NO. 7.
Cron. Bal., Pat. Reg., adj. to H., C., Position and Isochronism, Nickel . . .

This is what GEN. GREELY, now at the head of the U. S. Signal Service Bureau, said of the Howard Watch he carried on his Arctic Expedition:

NEWBURYPORT, MASS., November 24, 1884.

Gentlemen—It gives me pleasure to testify to the extreme satisfaction I derived from the performance, in the Arctic Circle, of watch No. 44,192, made by your company. It was in use by me for all of my personal observations for time and latitude in the field, and was considered by me the most reliable watch in the expedition. From my three years' experience I would especially recommend such watches for field work in Arctic or other explorations where timepieces are subjected to remarkably rough treatment and extreme changes of temperature. Our pocket chronometers unfortunately proved too delicate for our work.

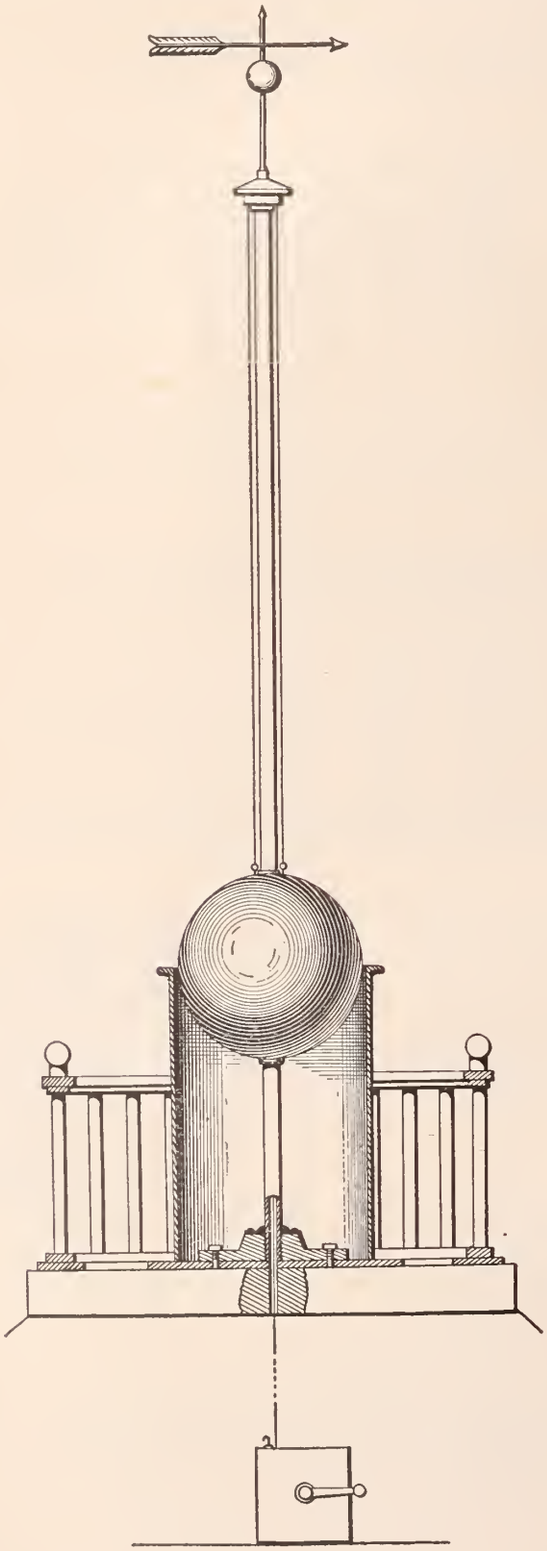
A. W. GREELY,
U. S. Army.

E. HOWARD WATCH AND CLOCK CO., BOSTON, MASS.

The E. HOWARD WATCH AND CLOCK CO.

BOSTON. NEW YORK. CHICAGO.

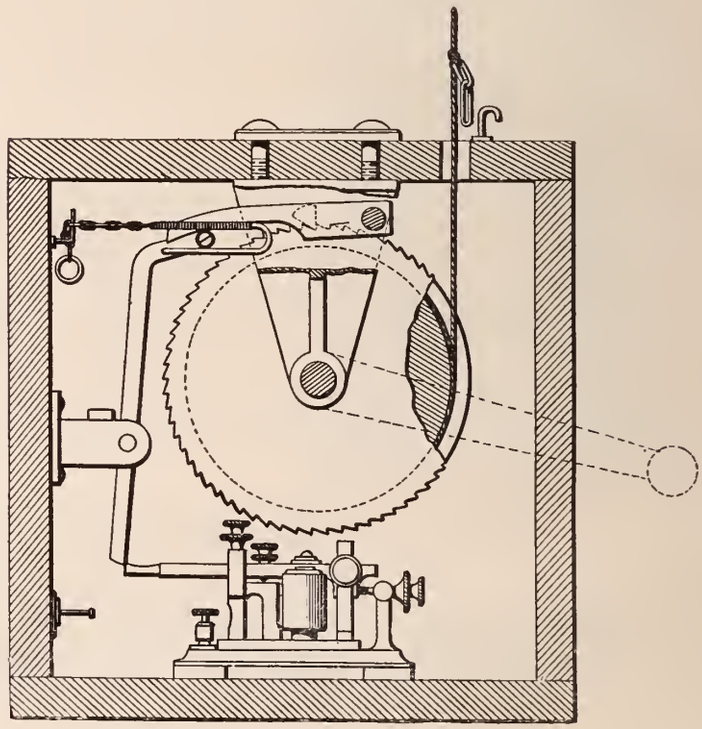
transmission of the signal will be less than one-fifth of a second. In effect, by the dropping of a time ball, the setting of a clock, the stroke of a bell or the sound of a telegraphic instrument, the true time is ascertained with as much exactness as if the standard observatory clock were itself at each and all of the stations where the signals are received. The work would be limited to that done in Washington but for the co-operation of the Western Union Tele-



Time Ball.

graph Co. Each day this company suspends its private business for the time used in transmitting the signals, and allows the Observatory the free use of its great facilities. This enables the Observatory to automatically drop time balls by signal from Washington at the prominent seaports enumerated above. Under the auspices of the Spanish authorities, a time ball is dropped at Havana by the aid of signals received from Washington, via the cable between Key West and Havana.

It may be asked now, why this great care and exactness? Why the necessity of uniform time? The answer is, that the country needs a standard of time as much as, or even more than, it does a standard of weight or of measure. This the Observatory undertakes to furnish. It is aided in this work by a branch observatory at the Navy Yard, Mare Island, Cal., from which, by the same system, time balls and time signals are operated on the Pacific coast. The time balls are welcome signals to navigators, for they know that by them they may determine with accuracy the rates and errors of their chronometers. They are none the less acceptable to the general public. The signals from the Observatory regulate the time for railways, whose officials within a few years have realized the importance of uniform standard time as an element of safety in the operation of their roads. In this connection the necessity for uniform standard time is particularly emphasized, where two or more companies with complex time tables operate their trains over the same tracks. Financial transactions of great magnitude often hinge upon questions of time; this is especially the case with time contracts in stock, produce and cotton exchanges. Here, again, a uniform standard of time removes complications.



Electrical Apparatus for Dropping the Time Ball.

The Naval Observatory was the pioneer in the distribution of time. Other observatories have since made it a part of their work, and have given, so far as is known, satisfaction to the localities, of which they are the time centers. In a number of cases they make use of the system which has been adopted at the Naval Observatory. This system and the methods by which its objects are accomplished are known as the Gardner System of Observatory Time. It has been adopted by the government for its time balls and time signaling service, as it is the simplest and most certain known for the automatic distribution of time.

At the Exposition Universelle, just closed in Paris, the Gardner system received the *grand prix*, while its inventor was awarded a gold medal and made an *officier d'académie*. The system has been adopted by the Chilian Government, and Mr. Gardner received the thanks of that Republic for aiding it to establish a government time service. These are but just and well-merited honors to one who has devoted twenty-five years of labor and personal expense to the development of a system for the automatic distribution of time, and has succeeded at last in perfecting one satisfactory to the government, to the great railways of the country and to public interests generally.



THE BURIED CHRONOMETER.*

I.

The air was thick with the scudding snow,
The sky was grim and dark,
Fast in the jaws of the grinding floe
Lay the Polaris bark ;
Twas an arctic night in '72, and Skipper Hall urged on his crew :
"Courage, men! on towards the goal, by sleds we still may reach the Pole!"



II.

High to the North the icy flame
Of the Aurora glowed ;
Across that land without a name
Lay their predestined road.
The wild dogs of the Eskimo snarled at their traces in the snow,
The sleds were loaded and the men fared bravely northward once again.



III.

Days passed away and nights as gray
Passed into other days;
Canned goods, guns, boots they threw away,
Yet struggled on always!
At last the captain said: "Our food is all gone now, what is the good
Of carrying a chronometer to tell us when meal times are near?"



IV.

Deep down beneath the grinning ice
That ticker they interred,
But still it ticked; its "still small voice"
Across the waste was heard;
The polar bears shook off their rime and came in droves to learn the time;
The seals cavorted round in joy and chorussed "larboard watch ahoy."

V.

Four years passed on; the box was found
By Captain Nares men,
The ice had kept it fresh and sound—
They wound it up again;
"Alas!" they cried, "where is the crew that spouted this?" for well they knew
Though icebergs there were pretty thick, not even ice was sold on tick!



VI.

That chron' still goes; in Washington
A Naval Bureau guards it,
And for those years it couldn't run
With winding oft rewards it!
The bears and seals still haunt the spot where long it lay in icy grot,
With hope deferred their hearts grow sick, they listen still for its "tick, tick tick!"

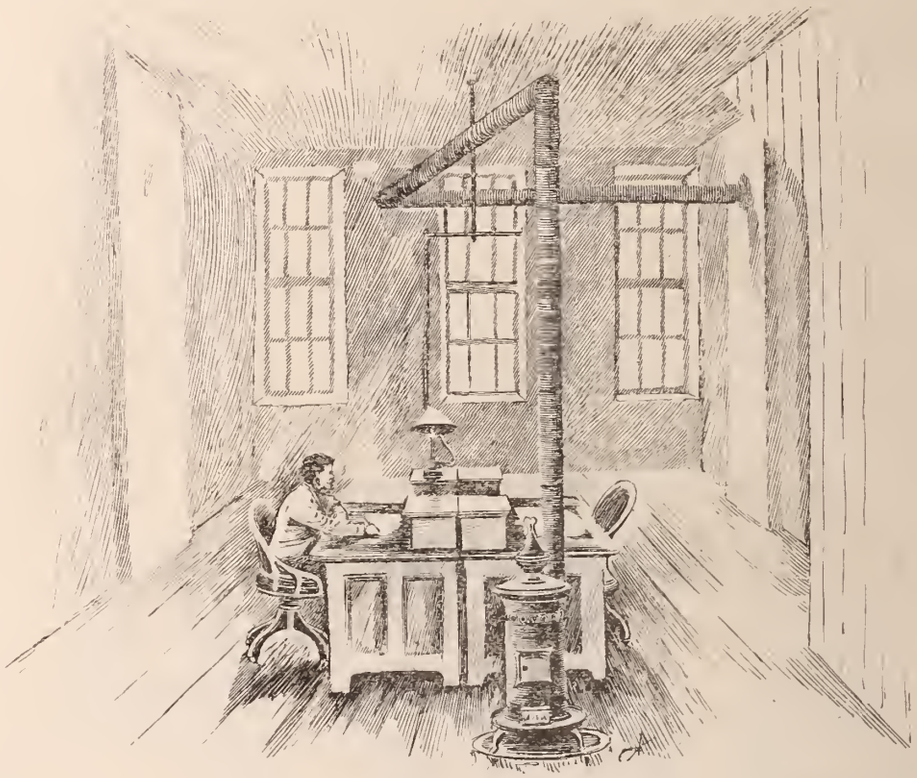
J. P B

* An Historial Fact: see Foreign Gossip, p. 47, January CIRCULAR.

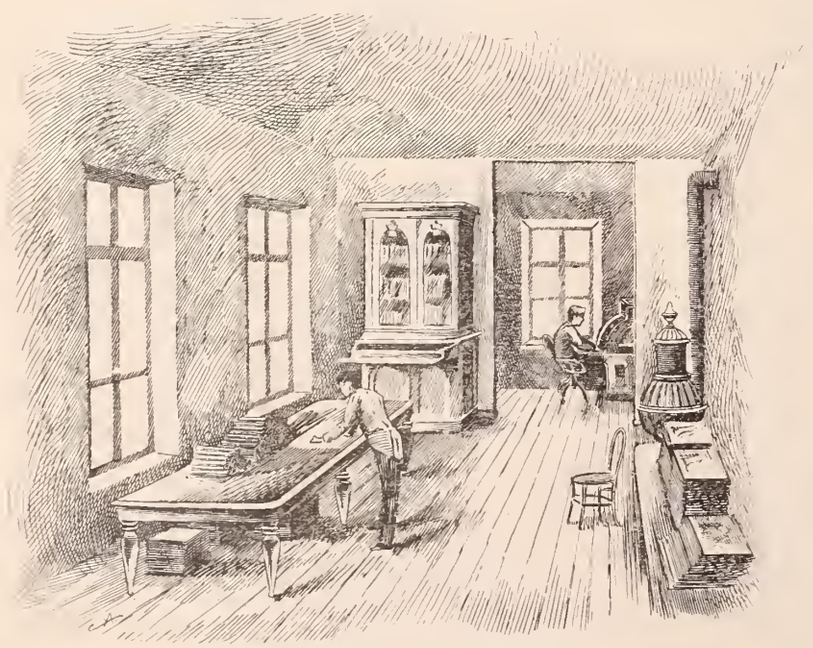
Our Twenty-First Anniversary.

THE JEWELERS' CIRCULAR attains its majority with the present issue. It is not only the pioneer of all the jewelry journals, but is also one of the oldest trade journals in the country. In 1869 very few of the special journals that now wield such commanding influence in nearly all lines of trade were even contemplated. To make a journalistic venture, therefore, so new and strange as the launching of a paper devoted exclusively to the interests of the jewelry trade required considerable boldness and foresight at that time.

THE CIRCULAR owes its origin to the late Mr. D. H. Hopkinson, who, prior to 1869, was a popular and successful canvasser in the advertising department of the *Evening Mail*, now the *Mail and Express*. His duties on the daily brought him often in contact with the jewelry trade, and in his case to be known was to be esteemed. When the idea of starting a trade paper occurred to him he naturally turned to the jewelers as the most promising field. He accordingly made a connection with Donovan & Londergan, printers, of 269 Pearl street, and they commenced issuing a four page monthly sheet of small newspaper size. An office was fitted up at the printery (see illustration), canvassers were employed to solicit the trade, and special writers on horological and other trade topics were retained. The newcomer soon won its way into favor, and encouraged by its reception, the publishers changed the form of the paper to its present size and added to the number of pages, a consolidation being effected about that time with *The Horological Review*, a New York competitor. Increasing prosperity was its merited portion. In 1871 THE CIRCULAR passed into the hands of Mr. Hopkinson as sole owner, and shortly afterwards he took an office at No. 42 Nassau street, depicted in the second cut. This office will be recognized by scores of our friends in the trade, whose frequent visits made it nearly as familiar to them as their own hearthstones. Mr. Hopkinson, who was of most genial disposition, counted his friends by the hundreds, both among the wholesale and retail branches of the trade. The office speedily became a social headquarters, prominent dealers of Maiden Lane and visitors from out of town dropping in habitually to have a chat with the affable proprietor. For sixteen years the sanctum remained at the same place.



FIRST OFFICE IN PEARL STREET.

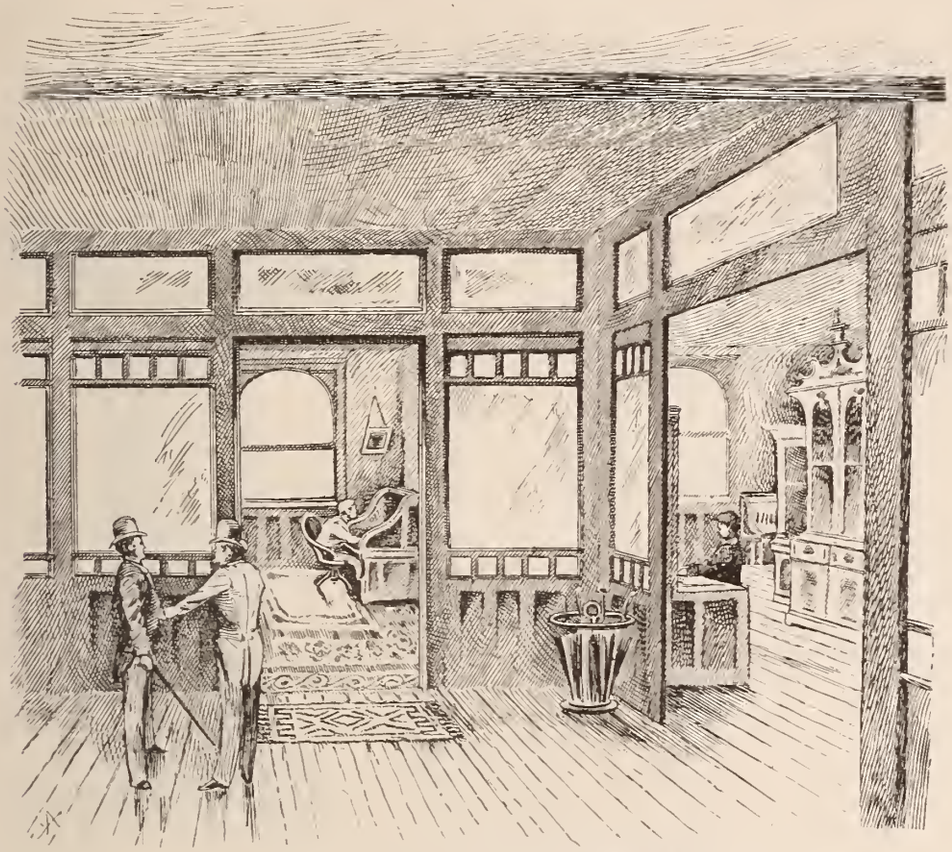


THE NASSAU STREET QUARTERS.

In 1885 the entire trade sustained a loss in the death of Mr. Hopkinson, who had endeared himself to all who came in contact with him, by his many generous and manly traits. THE CIRCULAR then passed into the hands of the present company, the management being entrusted to the late Seth W. Hale, who had for years been connected with the jewelry trade and enjoyed a large acquaintance. Under his administration the journal maintained the high standard of his predecessor. The growth of the paper rendering more commodious quarters desirable, the present spacious offices at 189 Broadway were taken and fitted up with every convenience. Mr. Hale died in December, 1888.

The history of THE CIRCULAR has been one of unvarying prosperity from its inception. It soon became and has since remained the recognized authority on technical matters. The names of "Excelsior," Dr. Bucklin, "Detent," "A Man who has Worked Twenty Years at the Bench" and other contributors being household words among the watchmakers of the land. It has been a *vade mecum* to thousands of apprentices, who through the constant study of its pages have become proficient workmen. Many of its serial articles are now classics and have a large sale in book form. The proceedings of the old "Horological Club" were read with as much interest as is excited by some serial novel in one of the literary magazines. "Excelsior's" "Isochronism" and "Practical Treatise on the Balance Spring;" "Advice to Watchmakers' Apprentices," "Lathes and Lathe Work," and a dozen other titles that might be gleaned from the indexes of past volumes will ever be fresh in the minds of more advanced readers who derived pleasure and profit from them. From the outset the policy of the journal has been to provide for its readers articles original and instructive, written by experts in the various subjects of which they treat. That this policy was a wise one the long career of the journal and the high appreciation in which it is held by the trade, afford ample proof. THE CIRCULAR has always aimed to be an educator. It is impossible to bestow higher praise upon a book or a journal than to call it a friend. Letters received almost daily at the office of publication bear testimony that such is the relation-

ship existing between THE CIRCULAR and its readers. It is an instructor, a companion, a friend. It is a bright record to look back on, this history of twenty years! The path is strewn with the wrecks of many ambitious enterprises in this and kindred fields of journal-



JEWELERS' CIRCULAR, 189 BROADWAY, N. Y.

istic effort, but THE CIRCULAR still lives with the proud consciousness of having attained its majority. The publishers may well feel elated at the record of the journal. It has been weighed in the balance and not found wanting.

Pennsylvania Retailers' Association.

THE first annual meeting of the Pennsylvania Retail Jewelers' Association took place on January 8th at the United Friends' Hall, in Philadelphia. Many prominent jewelers from Pennsylvania and Maryland were in attendance, and several hundred telegrams of regret for absence and encouragement for the association's plans and objects were received. The meeting had been called for the discussion of grievances against the jobbing trade and the organization of a national association of retail jewelers. Many plans for the amelioration of the trade are in contemplation. The association will endeavor, as soon as it has gained sufficient numbers, to prevent jobbers from retailing, and put a stop to the sale of jewelry to dry goods, grocery and notion houses. A plan is also under consideration for the formation of a large stock company, to be composed of members of the organization and a manufacturing concern with which the association is negotiating.

The meeting was called to order by the newly-elected vice-president, James G. Maree, who made a speech of welcome, outlining the purposes of the organization. This was followed by an address from the president, A. S. Goodman. Both gentlemen were roundly applauded. Speeches were also made by Simon C. Levy and Treasurer William Haines, explaining the association's objects and urging those present to take strong and united action. A list of jobbers who sell at retail was ordered prepared and sent to all members of the association. It was also determined to take active measures against jobbers who sell to the dry goods trade and others outside the legitimate jewelry trade. Preparations were made for the extension of the association throughout the entire country.

In the evening a banquet was held, at which speeches of similar purport were made by C. B. Lynch, E. S. Rodley, Simon C. Levy, President A. S. Goodman and others. An interesting feature was the address of Mr. Harrison, of Vineland, N. J., said to be the oldest living jeweler in the United States. At 104 he talked with as much spirit and determination as the younger members. Another meeting will take place in February, when some of the plans and suggestions broached at the present session will be put into practical operation.

The following are the officers and Board of Directors of the association for the ensuing year: Arthur S. Goodman, president, Fifth and Spruce streets; James H. Maree, vice-president, Manayunk, Pa.; J. W. Forsyth, Jr., secretary, 1312 Columbia avenue; William Haines, treasurer, 1220 Columbia avenue. Board: Richard Rinkstone, 1905 South street; John F. Bates, 2122 North Front street; R. H. Bottomley, 4745 Germantown avenue; H. A. Cain, 260 North Thirteenth street; C. L. Conrad, 1405 North Seventh street; August Groth, 1319 South Third street; John R. Hamer, 2323 Frankford avenue; George Hoffman, 1108 Columbia avenue; George S. Katz, 1929 Germantown avenue; John H. Lhubier, 1135 Passyank avenue; William. H. Long, 1627 South street; James Orr, 2038 Germantown avenue; Charles Liggini, 1406 North Second street; S. L. Shumo, 2258 North Front street, and Simon C. Levy, 1781 Ridge avenue.

The Development of the Lathe.

BY AMBROSE WEBSTER.

THERE IS no tool on the watchmaker's bench that is so expensive, valuable or attractive as a nickel-plated American watchmakers' lathe. It is expensive, because in its construction, though there is a comparatively small amount of material used, a large amount of expensive labor is necessary. It is valuable because it is ready for use at a moment's notice, and furnishes the capability to polish pivots and staffs and perform any of the numerous operations so constantly required in the repairing of watches. It is attractive through its highly bright appearance



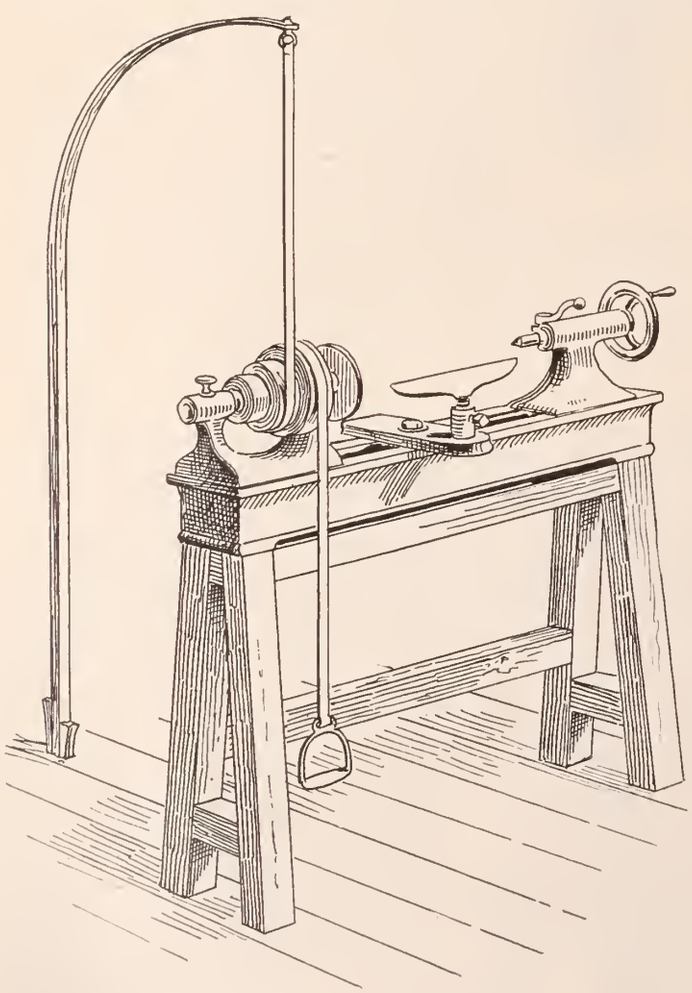
PREHISTORIC LATHE.

and delicacy and beauty of form. Through this attractiveness, the lathe proves of value as an advertisement to the owner, for, when a customer upon entering his shop, discerns the neat and trim American lathe instead of the rough-looking affairs he remembers were universally used in his youth, he argues that the possessor

of the better tools must perform better work. The efficiency of the American lathe is undeniable; skilled workmen agree that they can do from 20 per cent. to 25 per cent. more with it, than with the old styles, The best manufactures have been copied in England, France, Germany and Switzerland.

As very few watch repairers ever consider the progressive steps in the development of the lathe from its original form used in prehistoric ages, down to its present perfect construction, I think a review of this step in simple outline will prove of interest and value. In the first illustration the crude, primitive lathe is depicted. It will be noti-ed that the article to be turned has both its ends or bearings fastened in the fork of two trees, and is revolved by a crank. The operator or turner holds the cutting tool against the revolving object, his hands resting on the fork of a tree-branch, which is driven into the earth.

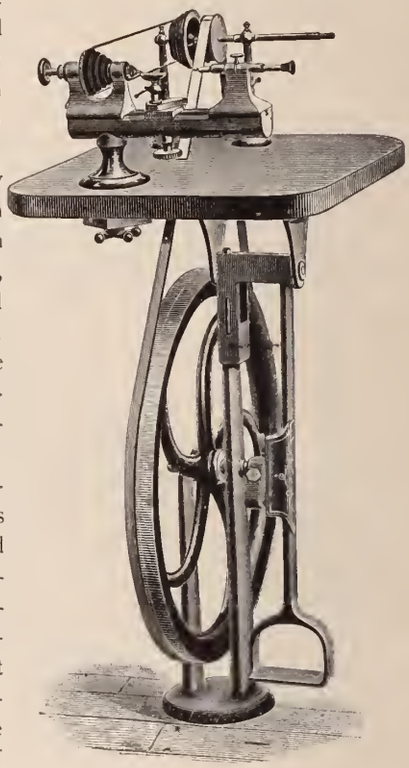
There were several minor stages between the primitive form, and the ingenious Egyptian lathe; but my space being limited, I will hurry to a description of this machine. The Egyptian lathe for centuries was in universal use, and even at the present moment in some out of the way places still exists. It was originally made wholly of rough wood, and was composed of a spindle and pulley mounted upon a stand, looking more like the framework of the door of a 'og-cabin, than a piece of machinery. The power for driving this lathe was as follows: a cord was at one end fastened to the pulley, the other end being tied to a branch of an adjacent tree, which was seen downward to form a spring. A pressure of the foot



THE EGYPTIAN LATHE.

in the stirrup produced a forward rotary motion which was reciprocated backward by the release of the foot-pressure and the recoil of the tree branch; the continual pressures and releases producing a constant reciprocal rotary motion. As years became generations, and generations centuries, the material used in the manufacture of these machines, as seen in the illustration was to change to iron, the principle of regenerating power remained essentially the same, a springy pole being used instead of a tree branch. The Egyptian lathe has entirely disappeared in America, but as I have said, still exists in remote parts of Europe,

Until quite recent days, the fiddle-bow was almost every watchmaker's principal tool, and is now utilized by many mechanics. This was, or rather is, but a modification of the reciprocal rotary motion in the Egyptian lathe. It is too widely known to bear profitably a description at this day.



THE PERFECT LATHE OF TO-DAY.

This final stage, the fully developed machine, is shown in the last illustration, which gives an improved foot-wheel, driving to a countershaft, and from the latter to the lathe. Every watchmaker's lathe should be set up thus to exercise its full value to the workman.

To consider some of the essentials of a perfect lathe. As is known, every article turned will be of the form of the bearing of the spindle, consequently if the bearing is not perfectly round, the article cannot be perfectly round; the shoulders of the spindle must be perfectly true, or the truth of the turned article will be affected; the spindle of the lathe should revolve with uniform freedom and must not have hard spots during the revolution; the general use of spring chucks requires that the mouth and throat of the lathe shall be perfectly true, and both hard, and that the chucks shall be hard, and ground true after hardening; the tailstock spindle should also be perfectly straight and round, and fit accurately in the hole. The process of binding the spindle must not have any effect upon its alignment; it is also absolutely necessary that the fine point of the tailstock shall accurately match and align with the point of the center of the headstock, to secure which end very expensive tools and machines have been made, adding largely to the general cost of the lathe. The latter essential, capable of fulfilment in a lathe, proves the lathe of being perfect in construction. Some manufacturers are producing a lathe in which the tailstock may be reversed upon its bed, and either end perfectly align with the headstock.

Notwithstanding that lathes possessing the above qualities cost 15 per cent. more than those built without particular care, the difference in the efficiency of the two varieties is a larger per cent. than that of the difference in cost. Every investor hopes for the return of a good dividend, and experience has proved that a perfect lathe pays an annual dividend of 50 per cent.

—The "brilliantine," or bright cut silver jewelry, manufactured by R. Blackinton & Co., North Attleboro, Mass., has been one of the most decided hits of the season. It is of most wonderful brilliancy, the many polished facets of which it is composed sparkling like the diamond. Illustrations of this novel and attractive jewelry will be found on another page of this issue. It is made in bracelets, queens, necklaces, drops, lace pins, scarf pins, victorias, buckles, etc.

OUR TRADE ORGANIZATIONS.

DURING the past month the very air of the jewelry trade seemed to be pervaded with the breath of annual meetings, conventions and banquets. The gossip and eager expectation concerning the first annual banquet of the New York Jewelers' Board of Trade, the curiosity aroused concerning the half secret doings of the annual convention of the National Association of Jobbers in American Watches and the American Watch Casemakers' Association, the feeling of fraternity engendered in the breasts of thousands by the annual meetings of those useful societies, the Jewelers' League and the Jewelers' and Tradesmen's Co., and the interest manifested in the meetings of the Jewelers' Safety Fund Society, the Canadian Association of Jobbers, the Manufacturing Jewelers' Board of Trade—all combined to create an activity in the trade that reminded one of the weeks preceding the holidays As this general interest is naturally accompanied by a sense of wonder at the large number of organizations of which the jewelry trade is pre-eminently fruitful, we give here a list of these institutions of the trade, together with a brief account of their origin and purposes.

THE JEWELERS' SECURITY ALLIANCE.

THIS important association was founded on April 25, 1883. The organization was brought about by the necessity of combined effort on the part of retailers, manufacturers and jobbers of New York City, to prevent the robberies of jewelers' safes, which previous to that time had been of far too frequent occurrence. A large membership was at once secured, and the ending of the first year showed a roll of 460 names. The membership is now about one thousand, representing almost every State and territory in the Union, and including many of the largest retailers, jobbers and manufacturers. Briefly, the object of the alliance is the rendering of assistance to its members whose safes have been or may be burglarized. With this in view, skillful detectives are employed to ferret out and bring to punishment the perpetrators of every robbery committed upon its members. The detective service employed is the old and well-known Pinkerton Agency, undoubtedly the most reliable and successful agency of its kind in the United States, whose ramifications extend to or have connections with all points in the known world. It is intended by this means to so intimidate burglars that they will pass by and not molest jewelry establishments where the certificate of the Alliance is displayed. The readiness with which diamonds, watches and jewelry can be converted into cash, makes the safes of retail jewelers especially tempting to burglars, and as loss to the retailer effects also the jobber and manufacturer, protection to the former ensures his creditors from loss as well. All persons engaged in the jewelry or kindred trades are eligible to membership. The present officers are as follows: David C. Dodd, Jr., President; Augustus K. Sloan, 1st Vice-President; Henry Hayes, 2d Vice-President; David Untermeyer, 3d Vice President; Chas. G. Lewis, Treasurer; Geo. H. Hodenpyl, Secretary. Executive Committee, J. B. Bowden, Chairman, C. G. Alford, N. H. White, F. Kroeber, Silas Stuart and H. H. Butts. Examining Finance Committee, J. P. Snow and Henry Abbott.

NEW YORK JEWELERS' ASSOCIATION.

THIS is the oldest organization of its kind in the country, and its history shows one unbroken record of success. It was organized in 1874, its object being to protect and promote the interests of its members, who shall be wholesale dealers in watches, jewelry, precious stones, silverware, plated-ware, clocks, fancy goods, or kindred articles. With this object in view, three departments have been established, namely: a Commercial Reference Department, from which is furnished to members reports giving authentic information on the financial standing, etc., of their customers.

It is a medium through which reports regarding protests, extensions and assistances are promptly made, and from which is is sued to each member daily a manifold giving arrivals, items of interest, and note accounts in attorneys' hands. An Employment Department, in which influence is used in obtaining situations for well-recommended, capable and honest individuals who are referred to the Association by members, and help exercises in filling vacancies which may occur in any branch of a member's business is attached to it as also a Law and Collection Department in which the services of nearly seven hundred sharp and reliable attorneys are employed. The following gentlemen are its officers: Executive Committee: F. S. Douglas, President; J. B. Bowden, Vice-President; Alfred H. Smith, Wm. H. Atwater and George C. White, Jr. Membership Committee: Nicholas Geoffroy, C. Anthony Fowler and E. Aug. Neresheimer. Auditing Committee: George W. Shiebler, Joseph G. Bacon and Jos. F. Chatellier.

THE JEWELERS' LEAGUE.

ON May 26, 1887, a number of gentlemen connected with the jewelry trade, assembled at the office of Woglom & Miller (now Gilbert T. Woglum), 22 John street, New York, with the object of organizing a society for the purpose mainly of benefitting the families of those members who may be removed by death. The signers of a set of resolutions adopted at the meeting were: G. T. Woglom, H. T. King, E. Van de Sande, W. L. Sexton, J. P. Snow, H. Carter, W. C. Kimball and N. E. Whiteside. On June 8, of the same year, the Jewelers' League became an established institution. It was incorporated on November 24, 1887. The principal motives of the League is to bring about a closer acquaintance among the members of the jewelry and kindred trades, and for the maintenance of such plans as will tend to the mutual benefit and protection of its several members or their families, its prominent object being to pay a fund to the families or other legal representatives of its deceased members. It furnishes insurance at net cost, for none of its officers receive remuneration. The following are its offirers: President, Henry Hayes; 1st Vice-President, Joseph B. Bowden; 2d Vice-President, Charles G. Lewis; Secretary and Treasurer, William L. Sexton; 3d Vice-President, James P. Snow; 4th Vice-President, John R. Greason. Executive Committee: Geo. H. Houghton, W. H. Jenks, A. A. Jeannot, David Untermeyer, Geo. R. Howe, Wm Bardel.

NEW YORK JEWELERS' BOARD OF TRADE.

THIS ever-growing and powerful organization was founded in the early part of 1885, and incorporated March 3, 1885. Its object is to insure united action, on the part of its members, whenever their interests are concerned; to collect and impart such information in relation to the character and the financial standing of jewelry dealers as may prevent disastrous or fraudulent failures; to rigorously investigate all failures, and report upon the amount of the insolvents' liabilities and assets, and what can be realized upon such assets, either by the debtors or by the Board, and to report a basis of settlement. Any firm or person in good standing engaged in the wholesale watch, jewelry or kindred trades, may become a member of the Board. By an amendment recently enacted, all initiation fees were abolished until the membership reaches 150. There are two departments: Bureau of Records and Reports for the purpose of furnishing the members of the Board definite and accurate mercantile reports of the character and responsibility of all parties dealing or desiring to deal with them; and a Bureau of collection, for the collection of accounts of members coming due and accounts past due. The present officers are: President, Leopold Stern; 1st Vice-President, Gurdon W. Hull; 2d Vice-President, Edmund J.

Scofield; Treasurer, David Keller; Secretary, Herbert M. Condit. Directors: Samuel Aufhauser, William Bardel, John C. Downing, Gurdon W. Hull David Keller, Max J. Lissauer, S. F. Myers, August Oppenheimer, Frank H. Richardson, Edmund J. Scofield, Horace D. Sherrill, David N. Smith, Leopold Stern. Finance Committee: Leopold Stern, S. F. Myers, August Oppenheimer. Arbitration Committee: John C. Downing, Edmund J. Scofield, David Keller, Horace D. Sherrill, Gurdon W. Hull. Membership Committee: Max J. Lissauer, William Bardel, Samuel Aufhauser.

THE JEWELERS' AND TRADESMEN'S COMPANY.

THIS comparatively young though well-known and successful organization was founded and incorporated in September, 1886, as a mutual benefit society, for the adoption and maintenance of such plans as shall tend to the mutual benefit and protection of its members, and to secure to their widows and orphans or to such other beneficiaries as they may have designated, their aggregated voluntary payments into the mortuary fund, equitably rated according to their respective ages.

The Company's system furnishes insurance at cost, upon the actual death rate experience. In every system of life insurance the assured are themselves the insurers. That system is nearest perfection which distributes the actual death cost most equitably, while adding for expenses the least that will sustain an organization efficiently and permanently.

The following are the present officers: President, Gilbert T, Woglom; 1st Vice-President, Thomas A. Young; 2d Vice-President, Shubael Cottle; Secretary, Ephraim S. Johnson, Jr.; Treasurer, Samuel W. Saxton. Board of Directors: Charles F. Roberts, M. D.; Samuel A. Baldwin, Gilbert T. Woglom, William B. Kerr, Samuel Sondheim, James A. Smith, Ephraim S. Johnson, Jr., Samuel W. Saxton, Charles A. Fowler, John C. Downing, Shubael Cottle; Counsel, James M. Hunt (of Rudd & Hunt).

THE JEWELERS' SAFETY FUND SOCIETY.

THIS guardian of the trade was incorporated April 21, 1884, by Enos Richadson, Henry Randel, Ira Goddard, Samuel W. Saxton, James C. Aikin, Samuel C. Scott, Charles G. Alford, William R Alling, Frederick S. Douglas, Courtland E. Hastings and Henry Hayes, and duly floated on June 19 of the same year. The object of the Organization is to insure manufacturers, importers, wholesale and retail dealers in watches, watch movements, jewelry, precious stones, silver ware, etc., against loss of or damage to any such merchandise owned by such parties or held by them in trust or on commission, or sold but not delivered, or in which they have any interest or for which they are in any respect liable, by any risks of fire, theft, barratry, and embezzlement, and any risks of transportation by land or water, during any period of time whilst such merchandise is outside their places of business, whether the goods are in the custody of the assured, their clerks, salesmen, or of any express or transportation line, or in letters or packages in the mail, or in the custody of any other person or corporation to whom the goods may have been intrusted, or on behalf of the above parties. The forms of insurance are upon the mutual plan. The following gentlemen comprise the Board of Officers: President, Henry Hayes; Vice-President, F. S. Douglas; Secretary and Treasurer, Ira Goddard. Executive Committee: Eno Richardson, Henry Randel, W. R. Alling, D. C. Scott, D. Oppenheimer. Directors: Enos Richardson, Henry Randel, Henry Hayes, William R. Alling, Ira Goddard, James C. Aikin, S. C. Scott, Chas. G. Alford, Fred'k S. Douglas, S. Oppenheimer, Jas. P. Snow.

THE JEWELERS' PROTECTIVE UNION.

THIS powerful organization was organized in July, 1878, for the purpose of mutual protection to any members in case of the robbery of any merchandise while in their custody, or their salesmen's, away from their respective places of business. Pinkerton's National Detective Agency is employed to prosecute the thieves, and to endeavor to restore the property. William R. Alling is President, Ira Goddard, Secretary and Treasurer; L. A. Parsons, Enos Richardson, S. Oppenheimer, and I. M. Miller, Executive Committee.

THE NATIONAL ASSOCIATION OF JOBBERS IN AMERICAN WATCHES.

THE National Association of Jobbers in American Watches has for its principal and controlling object the securing for the jobbers of their fair profit, which was gradually being frittered away by uncontrolled competition. The system of selling goods under contract did not originate with the Association, but had been pursued for years before by the Elgin Watch Co. and other large manufacturers in all lines of trade. The immediate cause of the formation of the Association was the sale of a large quantity of silver cases by the Dueber Watch Case Co. to H. Muhr's Sons, who in turn placed them on the market at a large reduction from current rates, and started a flurry on the price of such goods which soon ran them down below cost of manufacture, and threatened to demorilize the whole American watch business by making it unprofitable for jobbers to handle the goods.

In the Spring of 1885 a number of New York jobbers came together to discuss the situation, and S Oppenheimer, S. C. Scott and J. H. Noyes were appointed a committee to devise means to remove the difficulty.

After holding several meetings they called a convention, which met in New York, March 30, 1885, and was attended by representatives of all the principal jobbers in the country.

At this convention the Association was formed on practically the same basis as it exists to-day, the manufacturers agreeing to support it, and with minor changes as experience has shown to be required, has continued until the present time. Henry Hayes was elected the first President, and served with great acceptance until his retirement from business, when H. F. Hahn, of Chicago, assumed his duties, and has remained in office ever since.

James H. Noyes was the Secretary of the original Committee and has been the Secretary and Treasurer of the Association from the beginning, and when the office of Commissioner was created in 1888, that office fell to his lot also.

THE NATIONAL WHOLESALE JEWELERS' PROTECTIVE ASSOCIATION.

ON June 17, 1889, several prominent jobbers, at the solicitation of G Blum, of J. A. Schwarz & Co., Philadelphia, assembled at the Metropolitan Hotel, New York, for the purpose of expressing their views and adopting some plan whereby to alleviate the many abuses to which they are subjected to by several manufacturers. They asserted that these manufacturers sold their products to retailers and dry goods dealers at the same prices as they sold to them, thereby competing with their own customers. The National Wholesale Jewelers' Protective Association is secret in its character, and has representatives from all the principal cities—Chicago, Cincinnati, Pittsburgh, San Francisco, and Detroit have branches of this Association.

PENNSYLVANIA RETAIL JEWELERS' ASSOCIATION.

THIS organization was established on February 11, 1889, as the Philadelphia Retail Jewelers' Association. Generically, the objects of the association are the mutual benefit and protection of each member and the general retail jewelry trade; specifically, to compel all jewelry jobbers, no matter in what city or town or village they are located, from conducting a retail business in connection with the selling of goods to retail jewelers, and to prevent their disposing of goods to grocers, blacksmiths, barbers, expressmen, fancy and dry goods dealers, etc. With these in view, the association has passed resolutions that its members must not patronize any jobber who

conducts a retail business, or sells to any person outside legitimate jewelry dealers. Its present officers are as follows: Arthur S. Goodman, President; James G. Maree, Vice-President; William Haines, Treasurer; Jos. W. Forsyth, Jr., Secretary; Board of Directors, Richard Pinkstone, S. L. Schumo, John R. Hamer, John H. Shulier, Wm. H. Long, Geo. S. Katz, Geo. Hoffman, John F. Bates, Aug. H. Groth, Jas. Orr, Chas. Liggins, H. A. Cain, Simon C. Levy, Robt. H. Bottomley, Chas. L. Conrad. The present name, Pennsylvania Retail Jewelers' Association, was adopted at the annual meeting held January 2, 1890. Retail jewelers from all parts of the United States may be admitted to membership.

THE CHICAGO JEWELERS' ASSOCIATION.

ON May 20, 1876, an informal meeting of the jobbing jewelers of Chicago was held for the purpose of organizing an association, the objects of which were to be the cultivation of friendly relations between its members, the promotion of their best interests, and the accumulation and compilation of information relating to the credit of all their customers. The organization was completed on June 17 of the same year, the following gentlemen being elected as officers: W. F. Tompkins, President; Benjamin Allen, Vice-President; J. H. Weber, Secretary; L J. Norton, Treasurer, and H. F. Hahn, Otto Young, B. F. Norris and W. A. Giles, Executive Committee. The certificate of incorporation was issued to the association May 6, 1880, the incorporators named being H. F. Hahn, Theodore Kearney, Elisha P. Whitehead, Otto Young, Benjamin Allen, Steadman H. Hale, William F. Tompkins, Paul Juergens and Henry Oppenheimer. The methods adopted for the collecting and compiling of information as to the credit, character and general standing of the customers of members and the retail jewelry trade throughout the country have been constantly improved, until now the members have utmost confidence in its records. In 1888 a collection department in connection with the association was established. The present officers: H. S Peck, of the Waterbury Clock Co., President; M. N. Burchard, of Simpson, Hall, Miller & Co., Vice-President; A. L. Sercomb, of the Meriden Britannia Co., Secretary and Treasurer; Finance Committee, J A. Todd, of the Towle Manufacturing Co.; Grove Sackett, of the Wm. L. Gilbert Clock Co., and M. A. Mead, of M. A. Mead & Co.; Membership Committee, H. F. Hahn, of H. F. Hahn & Co.; J. F. Talbott, of the Dennison Manufacturing Co., and F. M. Sproehnle, of F. M. Sproehnle & Co. The election of officers takes place the first Tuesday in June.

THE MINNESOTA RETAIL JEWELERS' PROTECTIVE ASSOCIATION.

ON May 20, 1889, this organization was completed. The following officers were elected and still serve: President, T. B. Myers, St. Paul; Vice-President, J. B. Hudson, Minneapolis; Secretary, A. C. Clausen, Minneapolis; Treasurer, P. F. Egan, St. Paul. Executive Committee, T. B. Myers, St. Paul; A. C. Clausen, Minneapolis; C. Marshall, Minneapolis; J. E. Ingham, St. Paul; F. Williams, Stillwater; C. J. Odell, Windom; J. H. Isham, Duluth. The objects of this association are the same essentially as those of the other State jewelry trade societies: The protection of the retail jeweler from the inroads made upon his business by the promiscuous distribution of jobbers' catalogues and price lists, the selling of jewelers' goods by the dry goods, auction, general stores, watch club and installment houses. Dealers from any part of the country are eligible for membership.

WATCHMAKERS' AND JEWELERS' ASSOCIATION OF OHIO.

THE Ohio State Jewelers' Association, as the above organization was originally named, was organized by a number of gentlemen who met at Columbus, Ohio, on September 4, 1883, and elected S. C. Sisson, of Covington, O., President; Wm. Savage, of Columbus, O., 1st Vice-President; M. A. Burkett, of Middleport, O., 2d Vice-President, and Wm. A. Arnold, of Bellefontaine, O., Secretary. Though for years after its semi-annual meetings were more or less successful, it is only in the last two years that the association has really become a strong body, mainly through the zeal of such indefatigable workers as Henry Welf, of Cleveland, O.; W. N. Boynton, of the U. S Jewelers' Guild; L. F. E. Hummel, of Cincinnati, O.; Chas. J. Olin, of Piqua, O; S. C. Sisson, of Covington, O., and others; the members themselves, considering the number, were neglectful. The organization is now, however, on a good footing, and promises to become extensive in its membership, which at present numbers in the hundreds, comprising the best class of jewelers in Ohio and surrounding States, the larger cities being especially well represented. The objects of the association are the same as those of the U. S. Jewelers' Guild. The present officers are as follows: Henry Welf, Cleveland, O., President; A. L. Miller, Malta, O., 1st Vice-President; C. W. Horn, Findlay, O., 2d Vice-President; Ed. G. Lohmeyer, Newport, Ky., Secretary; H. H. Mithoefer, Treasurer. Executive Committee, A. D. Ernne, Cleveland, O.; L. C. Eisenschmidt, Newport, Ky.; L. F. E Hummel, Cincinnati, O.; N. Jacobs, Millersburg, O.; Ed. R. Kant, Cleveland, O. Council Committee, E. Shott, Cincinnati, O.; A. E. Collins, Cleveland, O.; A. Thoma, Piqua, O. Representatives to U. S. Jewelers' Guild, Henry Welf, Cleveland, O.; S. C. Sisson, Covington, O.; C. J. Olin, Piqua, O. Its official organ is the *Watch Dial.*

THE UNITED STATES JEWELERS' GUILD.

IN the *Watchmaker and Metalworker* for April, 1879, a notice may be found calling for a National Convention of the jewelers of the United States, to meet in Chicago May 15, of that year, to discuss the many grievances of the retail jeweler. In the June number of the same journal is given an account of that meeting, and a report of how the United States Jewelers' Guild was organized. The purpose of the Guild is to keep the jewelry trade within its legitimate boundaries; to attempt methods whereby qualities may be known to dealer and consumer; to correct all so-considered grievances against the legitimate jewelry trade, among the present of which are the indiscriminate circulation of catalogues, the practice of selling by jobbers and manufacturers to others than jewelers, and at retail, the establishing of auction stores, permanent and itinerant, and the owning or having an interest in retail stores, auctions, cheap stores, installment peddlers, and other outlets by wholesale dealers. The Guild has ever been in active operation, and has now a large membership reaching from Maine to Oregon, the several State retail jewelers' organizations being subordinate to it, and all working to accomplish practically the same end. THE JEWELERS' CIRCULAR of New York, and the *Jeweler* (formerly *Watchmaker and Metalworker*) of Chicago, are its official organs. At a meeting in its early history a trade mark, consisting of the letters U. S. J. and the word Guild artistically woven into a monogram, was copyrighted, and is now used as a stamp on the goods handled by regular guild members, these goods only being sold to such dealers. The present officers are: President, O. Startsman, Iowa City, Iowa; 1st Vice-President, S. M Bailey, Uniontown, Pa.; 2d Vice-President, F. H. Huntley, Cadilac, Mich.; Secretary and Treasurer, C. J. Olin, Piqua, O. Executive Committee, W. N. Boynton, of Iowa City, Iowa; S. C. Sisson, of Covington, Ohio; Gus Burkland, of Osage, Kansas; G. Scherzinger, of Fon-du-Lac, Wis.; J. R. Parsons, of La Porte, Ind. Board of Trustees, Joseph Welf, of Cleveland, Ohio; Oliver O. Startsman, of Iowa City, Iowa; J. S. Kelley, of Abilene, Kansas. Distributing Agent, Geo. B. Kelley, of Rockford, Ills.

THE MANUFACTURING JEWELERS' BOARD OF TRADE.

THIS board, organized in Providence, R. I., is formed for promoting the interests of the manufacturing jeweler—that is, the manufacturer of jewelry, silverware, watch cases or gold and plated pens and pencils; to protect him from fraud or unlawful exactions; to reform abuses in the trade; to produce uniformity in

the customs and usages of the trade, and promote a more enlarged and friendly intercourse between manufacturers, and mainly to diffuse among its members accurate and reliable information as to the financial standing, credit and character of dealers in jewelry. With the latter object in view, the board periodically issues reports that give such facts as are contained in the weekly reports of the established commercial agencies, together with estimates of the amount of indebtedness to the membership at any given time, as well as the amount of purchases, manner of paying, and the peculiar characteristics of a purchaser. The officers are: Dutee Wilcox, President; Wm. R. Dutemple, 1st Vice-President; James D. Lincoln, 2d Vice-President; H. S. Dorchester, Treasurer; M. W. Morton, Secretary.

THE CANADIAN ASSOCIATION OF JOBBERS IN AMERICAN WATCHES.

THE first steps leading to the formation of this organization were taken on April 25, 1885. On April 30, letters were read from leading firms in Montreal, Hamilton and London, expressing their hearty co-operation in the movement, and on May 22 the association was duly floated. Briefly, the purpose of this association is the sustaining of prices of American watch movements and silver cases. It is thus in affiliation with the Manufacturers' Association of the United States, as well as the Silver Case Manufacturers' Association and the watch movement companies. An applicant for membership must be possessed of a good moral character, and must make affidavit as follows: that he is engaged, or about to engage, legitimately, in the wholesale watch business; that he will make a first purchase of not less than $2,000 worth of combination goods; and that he will not use the goods so purchased in any way to defeat the expressed objects of the association. Its members are understood to agree to sell American watch movements at the list prices for Canada as decided by the watch companies, and gold filled, silver and nickel watch cases at prices decided upon by the American Watch Case Manufacturers' Association and American Watch Case Co. of Toronto. It is also understood that members must purchase during one year $10,000 net of combination goods; those not purchasing this amount shall not be sold direct by manufacturers, but shall have the right to buy from association jobbers at an advance of not less than 5 per cent. The following are its present officers: President, A. C. Anderson; Directors: Alfred Eaves, J. H. Jones, E. Scheuer, M. C. Ellis and A. C. Anderson; Treasurer, E. Scheuer; Secretary, Edgar A. Wills.

THE CINCINNATI WHOLESALE JEWELERS' ASSOCIATION.

THE Cincinnati Wholesale Jewelers' Association was incorporated under the laws of the State of Ohio on April 15, 1885, by C. Hellebush, Charles A. Nolting, Aaron Herman, A. Plaut, and Charles J. Stern. The association aims at securing among the wholesale jewelers of Cincinnati co-operation, mutual confidence and harmonious action in matters connected with their trade, and protecting the interests and enhancing the general welfare of the trade. A. Herman is the present President; S. M. Peck, Vice-President; Joseph Becker, Secretary and Treasurer, and A. G. Schwab, Executor.

ORNAMENTAL DESIGNS ON SILVER.—Select a smooth part of the silver, and sketch on it a monogram or any other design you choose, with a sharp lead pencil; then place the article in a gold solution, with the battery in good working order, and in a short time all the parts not sketched with the lead pencil will be covered with a coat of gold. After cleaning the article, the black lead is easily removed with the finger, whereupon the silver ornament is disclosed. A gold ornament may be produced by reversing the process.



[FROM OUR SPECIAL CORRESPONDENT.]

BOSTON, January 20, 1890.

One of the boldest and at the same time peculiar jewelry robberies that has occurred in Boston for a number of years, took place early in the evening on Monday, December 6.

Located at 1301 Washington street, is the jewelry store of C. A. Keene, a young man who has been in business there something over two years. The store, on the evening in question, was open as usual for business and brilliantly lighted within, and from the outside the electric lights made the place as light as day. The robbery was committed by a gang of five young men in this way: One of them went to the door which he barred by putting a short billet of wood through the brass handle, and banged on the door to attract the attention of the clerks inside, who rushed from behind the counters and show-cases to the door. When all the clerks were at the door, the rest of the gang broke the great plate-glass windows from the outside with kicks and blows, and quickly scooped rings, watches, jewelry and diamonds out of the windows to the amount of $2,000 worth. By the time the men inside had got to the window, after opening a heavy inner screen, the thieves had vanished, nor have they been found since.

George F. Smith, of the jewelry firm of D. F. Smith & Co., of Woburn, Mass., died January 10 at Woburn of paralysis and a complication of diseases. He was born at Woburn 47 years ago. He leaves a widow and eight children.

The general opinion of jewelry men in Boston is that the trade is fairly good, and 1890 promises a good showing of business.

Mr. Stone, manager of the salesroom of J. W. Tufts & Co., said a few days ago that the trade thus far this year was satisfactory and could not be complained of. The firm never expects anything very phenomenal in January, but this year is as good as last so far. Their trade last year was excellent, and he saw no reason why 1890 should not come up to 1889.

Mr. Poor, who has charge of the extensive jewelry department of Shreve, Crump & Low's establishment, says that it is a little quiet, but he sees prospects for a good year.

Mr. Floyd, of Floyd, Pratt & Rounds, when asked how trade was said that they were fairly busy with a steady trade. The all-prevalent "grip," that is no respecter of persons, not even jewelry clerks, has been laying his hand on the "drummers" and salesmen of this firm, and many of them have been at home shivering between the blankets. Mr. Floyd expressed the opinion that affairs would be considerably delayed by the epidemic, from the fact that many operatives have been incapacitated.

The Ripley Howland Manufacturing Co. say they have all they can do, and think that 1890 will show itself a good year. They have no boom, but a good steady trade.

The creditors of M. T. Quimby & Co., manufacturers of jewelry etc., No. 14 Hanover street, held a meeting the other noon. According to the statement which was rendered of the firms affairs, the direct liabilities aggregate $43,486.42, $22,125,37 being accounts; $20,976.75 notes and $384.30 unpaid taxes. There are contingent liabilities aggregating $17,331.46, $731.46 being endorsements on business paper discounted at banks and $16,600 outside endowments. The assets nominally aggregate $77,635.89, $13,246.54 being watch cases and movements; $13,167.06 jewelry and silver-plated ware, $166,62 cash on hand and in bank; $27,155.68 good accounts, $671.50 good notes, $4,518.4g, interest in the jewelry house of Kimball & Co., Kansas City, Mo.; $16,560 equity in real estate and live stock mortgaged for $4,000; $700 a mortgage on vacant land in Woburn, and $1,000 office fixtures. There are also

nominal assets of $12,798.69 in acconnts regarded as worthless, and $1,506 20 in notes regarded as of no value. After a full discussion of affairs it was decided by the meeting to have matters investigated by a committee of five, and Charles F. Morrill, C. H. Brown, C. D. Kingman, John Herbert and M. W. Morton, of Providence, were selected as the committee. Mr. Morton was chairman of the meeting, and Wm. E. Matthews secretary.

The Annual Meeting of the Jewelers' and Tradesmen's Co.

The Jewelers' and Tradesmen's Company held its fourth annual meeting on the evening of January 21, 1890, at the rooms of the New York Jewelers' Board of Trade, 41 Maiden Lane. In addition to the officers of the company, the following members were present:

Chas. S. Cook, Max Landman, S. F. Myers, Henry C. Ziegler, R. A. Briedenbach, Wm. Barthman, Sam'l B. Mann, Marcus M. Brewster, Alfred Frank, Chas. A. Ludlow, F. W. Vondersmith, Sigd. Veit, L. W. Sweet, Daniel M. Fisher, Richard Banse.

Though not a very large assemblage, they formed an interested and spirited body.

President Woglom called the meeting to order at 5 o'clock. After the reading of the Secretary's minutes were dispensed with, the President practically opened the meeting with the following address:



GILBERT T. WOGLOM.

THE PRESIDENT'S ADDRESS.

Fellow Members of the Jewelers' and Tradesmen's Company: The hopes and prophecies expressed in the last annual address to you have been fulfilled during the year just closed. We shall have the satisfaction of presenting to the meeting, by your officers, full and explicit data, gathered from our records, showing a large accession to our membership and funds.

We arrogate to ourselves no excessive wisdom nor industry, but proclaim to you that we have a wise and meritorious plan of assessment insurance, which needs only faithful presentation of it to meet with appreciation and response by our fellow tradesmen. Life insurance has become a necessary commodity. It is superfluous to reason as to its usefulness. The important question is, how most economically and safely, for both present and future, to provide it. We are just proud enough of our system, because of the encomiums bestowed upon it by experts, to feel that we have the most equitable, therefore, the safest, therefore, the strongest, therefore, the most enduring system, yet developed.

In caring for the interest of our members, your managers have been alert; carefully digested minor projects will, at the proper time during this meeting, be presented for your concurrence. It therefore remains for me but to make a few discursive comments.

Surely there ought to be something left in common courtesy, to restrain the representative of a sister organization from giving currency to ex-parte statements by a collector in his effort to force from our mortuary funds involuntary contributions.

The most infantile student of assessment insurance is awaie that any society (during the building up of its membership to the point whereupon the contributions by such membership will equal in amount the face of one of its largest certificates) cannot in equity, pay to a beneficiary a sum exceeding that realized to its mortuary fund by the contributions thereto by its members, whatever their number.

Our candidates for membership are reminded of it when our plans are developed to them. Our members are reminded of it in the monthly articles in the JEWELERS' CIRCULAR, *The Jewelers' Weekly*, and the *Jeweler*, of Chicago.

Our first deceased member was well informed upon this matter. A feeling of delicacy alone prevents a proper characterization of the efforts of this sister society to disseminate, at considerable expense, a pamphlet reflecting upon our experience which is but a duplicate of its own experience during the first six and one-third years of its life.

Its other literature frequently contains the statement, which was omitted therefrom before the inceptiou of this preposterous claim, to the effect that it has never compromised a claim.

If that statement is intended to convey the idea, by innuendo, that this society has done so, such statement is insincere and misleading as to this company. Our records and the facts refute it. We have never compromised a death claim.

If again, the statement is intended, by such an ill-chosen word, to convey the impression that we pay less, at the present time, than the face of our membership certificates, it is a juggling of words as to ourself, and a mis-statement as to itself, for the reason that every one of its first twenty death claims realized to the beneficiaries less than $5,000, the amount which it at present boasts of its ability to pay. Now its first beneficiary, in twelve months after its organization realized $459,80; its second, $1,599.80; its third, $1,647.30, and so on up to its 20th, which realized $4,882.50; not until its twenty-first death did it pay $5,000 in full, more than six years after its organization. Therefore, in the sense in which it would stigmatize a kindred society, it has itself compromised twenty death claims at less than one hundred cents on the dollar. People who live in either past, present or prospective glass houses should be careful not to throw stones.

These statements are made not in derogation of our sister society nor would we say aught to the even indirect detriment of a large number of our members who are members thereof, also; we speak now lest our silence and forbearance might be misconstrued, and that the trade and our members may have the facts which they may themselves compare with the facts that our first death in 24 months after our founding, realized $1,438.68, and our second and latest death, in 13 months thereafter, realized $2,406.90.

We do not lead you to "infer" anything by vague references. We give you facts from which to make logical deductions, with records of the said facts back of our statements.

Whatever may have been the actuating impulse of that society in gratuitously disseminating information as to our determination to protect the interests of our members, it can only react to the prejudice of that society and its member, and will cause our own and its joint members to appreciate the more by the contrast, our own official tolerence and comity toward our sister society during the three years in which we have been emulating the good work done by it, but upon another system. May our sister society "live long and prosper.

It is only small or envious souls that are jealous of another's achievements or success. We do not ask any rival to abate its business enterprise, but we may charitably regret that an officer thereof should be permitted to so enhance his official reputation for fraternal fairness that it might, if this matter be represented by the algebraic formula of "Zero multiplied by minus X."

One element of our success is attributable to the fact that though we are organized and officered substantially by the jewelry and kindred trades, our membership is not restricted. Whenever a member presents us with an application for membership from a friend in another industry, if he is as good a risk as our high standard requires, we accept him. We help him with our jewelers. He helps our jewelers by his membership with us, and gives us additional strength to carry on our work. In this we have but followed the example of several prominent organizations which have broadened their limitations as to what special classes they will admit, and they have met with immediate success and strength thereupon.

A ship captain observed two youths fishing from his wharf. The first was observed to cast an occasional catch back into the water, while the second industriously plied his line, and after having filled his basket, the two boys, side by side, walked up the pier. The captain, interested to learn the reason of the diverse methods of the two boys, accosted them with the usual salutation, "What luck, boys?" The second boy displayed a full basket of fish, and upon being complimented by the captain, replied: "Yes, sir; when I goes fishing I catches fish." The first boy exposed to view several eels in his basket, and upon being quizzed as to why he had thrown several fine fish overboard, with a look of surprise at the captain's obtuseness, replied: "Well, cap., I's been fishing for eels."

The old Scythians
Painted Blind Fortune's powerful hands, with wings,
To show her gifts come swift and suddenly,
Which, if her favorite be not swift to take,
He loses them forever.—*Chapman.*

During the past few months we have also had the benefit of gratuitous advertising, in a list of "Dead Assessment Societies," gotten up in the interest of, and for sale for distribution by, those who would cast obloquy upon Assessment Societies; the correctness of that list may be judged from the fact of having in it the name of the Jewelers' and Tradesmen's Company, than which there is no society in existence having as a society less present or prospective use for sexton or undertaker. A letter from our counsel to the publisher of this "Death List," as it is called, elicited the following retraction from the publishers:

"I beg leave to state that but few copies of the folder have been distributed, "and none have been sent out since November 26th." (The date of his reception of our demand upon him.) "The name of the Jewelers' and Tradesmen's Com- "pany has been erased from the plates, and all copies which included that Com- "pany have been destroyed. I regret the publication exceedingly, and willingly "make this retraction."

In the management of the affairs of our Company, I have been ably assisted by my fellow Officers and Board of Directors. In your selection of them individually and as a body, I feel you have been wise. Their counsel and judgment, whenever sought, has been valuable to our Company; their interest and effort for our common good has been unflagging.

If the interest and co-operation of more of our members could be secured, we would promptly reach the object now nearest our hearts, viz:—the number of members sufficient to pay a $5,000 loss in full.

With a present membership of which we have cause for self-gratulation, it would require but the addition of one new member by one out of each four of our present members.

Our Superintendent, Mr. Daniel M. Fisher, has been faithfully canvassing, but he can do no better than the labor of one man.

That we shall "get there" is only a question of time; it depends somewhat upon each of our members who hear my words, or read them, whether that time will be sooner or later.

Here let me make to each of you, my hearers and readers, a plain, business-like proposition, and consider, my dear hearer or reader, that I am addressing you individually, you personally, as if you were the only gentleman addressed:—

Would you prefer your beneficiary should be paid, upon your death, say 60 or

70 per cent. of the face of your membership certificate, or do you prefer that we should be in position to pay your beneficiary, if required to do so, three months from now, the full face value of your certificate? You promptly reply you prefer the latter proposition, and you are right in your choice.

Now, this is how it can be done: Make up your mind that neither of the other three members (of whom you are the fourth) will procure a new member, and that therefore you must do it; keep in mind "Poor Richard's" maxim—"If you want a thing done, send; if you want it well done, do it yourself." You will thus be sure that the quartet of members, of which you are one, will have performed its duty of securing one new member.

Again,—If you promise yourself that you will perform this duty, you may default in your promise. If you make the promise to me, you will keep it. Now, in the interest of yourself and your beneficiary, within twenty-four hours of hearing or of reading this, direct a postal card to me, P. O. Box 3140, N. Y. City, promising that within thirty days you will interest and secure one gentleman from among your eligible friends, and, my word for it, within ninety days from now we shall be able to pay our certificates in full, and close up our charter membership roll.

You have membership in a firm-founded, equitably adjusted, faithfully conducted Society, with which you are pleased, or you would not be one of it. Give your friend a like opportunity for safe, economical insurance therein before being required to pay an admission fee. It is not our province to tell the *Jeweler and Tradesman* how to make money; the "executive representatives," who are touring the country in behalf of the *Manufacturer and Wholesaler*, will inform his fellow tradesman how to make money; our province is to have him save it after he has made it, and to show him how to use it wisely after he has saved it.

This call for "more members" is chronic with assessment societies; it subjects them to ridicule by the "old line" insurance companies; but you will have noticed also that the "old liners" are no less in earnest in their search for "more members."

Alice Cary sings:

When the morning first uncloses
And before the mists are gone,
All the hills seems bright with roses,—
Just a little further on.

We have, perhaps during the early morning of our associational existence, promised you those roses "just a little further on"; if you but make this one final effort, however, and thus fil up our mortuary fund, we promise you a bed of roses ever thereafter, in that we shall then cease to prompt you for "more members."

Finally, all that your hard working officers ask is that you, fellow members, may give us less flowers and eulogy when we are gone hence, and more sympathy and assistance now while we are with you.

Our progress has been wonderful during the past three years, but we have the ambition, with which we wish to inspire you also, fellow members, to crown the work during the coming three months. Will you do it?

This address was followed by the reading of Medical Director Chas. F. Robert's report by Secretary E. S. Johnson, Jr.:

MEDICAL DIRECTOR'S REPORT.

NEW YORK, January 20, 1890.

MR. GILBERT T. WOGLOM,
President of the Jewelers' and Tradesmen's Co.

Dear Sir and Gentlemen:—I respectfully report that to January 1st, 1889, the total number of examinations and supervisions was as follows:

Examined and supervised		640
Approved	609	
Declined	31	
	640	
Since that report to January 1st, 1890, the term of one year, I have		
Examined		147
Approved	134	
Declined	13	
	147	
Reports of other medical examinations supervised		153
Approved	148	
Declined	5	
	153	
Total number of examinations and supervisions for the year		300
Approved	282	
Declined	18	
	300	
These added to the number in my last report make a total number of		
Examined and supervised		940
Approved	891	
Declined	49	
	940	

All of which is respectfully submitted,

CHAS. F. ROBERTS,
Medical Director.

President Woglom then read a communication from Aaron W. Rand, accountant, introducing the reading with the following:

In conformity with a resolution, and in co-operation with the wishes of our Board of Directors, I have had the books and accounts of the Secretary and Treasurer examined by an expert accountant, who is familiar with the system of assessment insurance, Mr. Aaron W. Rand, covering the time from our organization until the close of the last fiscal year—January 1st, 1890, this being our first audit.

THE ACCOUNTANT'S COMMUNICATION.

NEW YORK, Jan. 18th, 1890.

G. T. Woglom, Esq., President Jewelers' and Tradesmen's Co.:

DEAR SIR,—As requested by you, I have examined the books of the Secretary and the Treasurer of your Company to the 1st inst., and find down to and including certificate 845, (except 823, 829, 832, 837 and 844, still pending,), that the amount of annual dues received from the beginning up to that date exactly agrees with the amount stated by the Treasurer, and shown by his books as $10,518.

I find that the assessments entered as received by the Secretary upon the admission of members, together with the amounts stated as having been produced by assessments No. 2, $2,186.34, and No. 3, $3,222.81, substantially agree with the amount stated by the Treasurer, and shown by his books as being $8,901.47. There are a few minor variations in this account, and the amount received is slightly in excess of the amount shown due by the record of membership.

I have examined the accounts of money disbursed, and find the sum shown by the same to agree with the amount stated by the treasurer at $14,161.17, and vouched for bills on file audited and receipted or paid by check.

Congratulating you on the favorable showing of new business for the year just closed, this report is

Respectfully submitted.

(Signed),
AARON W. RAND.

We shall annually, and oftener if deemed requisite for the interest of our members, have an examination of our books and accounts by a disinterested and expert accountant.

Secretary E. S. Johnson, Jr., then arose and read his elaborate statistical report, which was unanimously adopted:

THE SECRETARY'S REPORT.

To the Officers, Directors and Members of the Jewelers' and Tradesmen's Company:

GENTLEMEN—Your Secretary respectfully submits the following report for the year ending December 31, 1889.

Amount of Insurance Written and Insurance in Force.

	Amount Written.	Amount in Force.
Amount January 1, 1889	$1,646,500	$1,559,000
Amount written during the year	1,034,000	1,034,000
Amount reinstated during the year		15,000
	$2,630,500	$2,608,000
Amount terminated in 1889 by non-payment, resignation and death		117,000
		$2,491,000
Insurance Written of Applications.		
Rejected	$95,500	
Advised to withdraw	30,000	
Pending	108,000	
Advised to be re-examined	14,000	
	$247,500	$247,500
Amounts December 31, 1889	$2,680,500	$2,243 500

Exhibit of Certificates Issued and in Force.

	Issued.	In Force.
Total January 1, 1889	583	558
Issued during the year	256	256
Reinstated during the year		4
	839	818
Terminated during the year		38
Totals December 31, 1889	839	780

Exhibit of Membership.

December 31, 1889, there are	216	insured for	$5,000,	aggregating $1,080,000
	97	"	4,000,	" 388,000
	99	"	3,000,	" 297,000
	7	"	2,500,	" 17,500
	155	"	2,000,	" 310,000
	1	"	1,500,	" 1,500
	148	"	1,000,	" 148,000
	3	"	500,	" 1,500
Insurance in force December 31, 1889				$2,243,500

December 31, 1889, there are 54 members insured twice, making the total certificates in force 780.

Exhibit of Applications.

	Received.	Approved.	Rejected.	Advised to Withdraw.
Totals January 1, 1889	626	598	17	10
From Jan. 1, 1889, to Dec. 31, 1889	297	277	19	2
Totals December 31, 1889	923	875	36	12

Applications received		923
" approved	875	
" rejected	36	
" advised to withdraw	12	
	923	

Applications approved		875
Certificates issued for	839	
Applications pending	36	
		875

Average age of the members admitted in the first quarter is 33; for the second quarter 40; for the third quarter 37; and for the last quarter 41. Average age for the year is 38.

Income.

For annual dues during the year	$4,611.00
From assessment on new insurance in 1889	1,165.93
" " " mortuary call No. 2	3,222.81
Total receipts	$8,999.74

Amount of Mortuary and Reserve Funds.

Total receipts from assessment to and including Dec. 31, 1889, is	$8,901.47
20 per cent. placed to the Reserve Fund	1,780.29
	$7,121,18
Less amount paid for death losses	3,845.58
	$3,275.60
Interest received from U. S. Trust Co. to Jan. 1, 1889	43.79
Mortuary Fund with interest added Dec. 31, 1889	$3,319.39

All of which is respectfully submitted.

E. S. JOHNSON, JR.

The Treasurer, Samuel W. Saxton, was then called upon to deliver his report, which was as follows:

THE TREASURER'S REPORT.

Annual Report of the Treasurer for the year 1889.

Net assessments for mortuary purposes from January 1, 1889, to January 1, 1890	$4,388.74	
80 per cent of same placed in Mortuary Fund account is		$3,510.99
20 " " " Reserve " "		877.75
Amount received during year for annual dues	$4,611.00	
Amount received from U. S. Trust Co. (being interest on deposits of 1888)	43.79	
Total cash receipts for 1889	$9,043.59	
Mortuary Fund balance Jan. 1, 1889	$2,171.51	
Reserve " " " "	902,54	
Annual dues " " " "	254.09	
Total cash assets as of Jan. 1, 1889	$3,329.04	
	$12,372.57	

Disbursed during the year 1889.

Mortuary call No. 2	$2,406.90	
General expenses	4,663 58	7,070.48
Net cash assets		$5.302.09

The Mortuary Fund balance now is	$3,275.60
" Reserve " " "	1,780.29
" Annual dues " " "	202.41
" Interest account " "	43.79
	$5,302.09
Now on deposit with U. S. Trust Co.	$4,710.94
" " " Chatham Nat. Bank	414.29
Cash in hand	176.86
	$5,302.09

S. W. SAXTON, *Treasurer.*

Secretary Johnson next read the report of the Board of Directors, which is as follows:

DIRECTORS' REPORT FOR THE YEAR ENDING DECEMBER 31, 1889.

To the Members of the Jewelers' and Tradesmen's Company:

One more year in the life of this company has passed away, and its brilliant progress, in short, its every act, have become matters of recorded history; and at this annual meeting, the close of the third year and the beginning of the fourth, we welcome you again.

Unfaltering has been our support, triumphant has been our progress.

At the beginning of the year 1889 the insurance written amounted to $1,646,500, and on December 31, 1889, it amounted to $2,680,500, making the amount of insurance written for the year ending December 31, 1889, $1,034,000, which is an increase over the amount written during the year 1888 of $449,000 over the amount of 1887 of $227,000, and over the amount of 1886 of $779,500. As we enter upon our fourth year, the outlook was never brighter nor more promising; the management are pressing forward to attain, if possible, even greater success than has heretofore attended our company.

Gratifying as this increase is, yet it is not as large as it can be made during the current year. Past success is only the harbinger of a grander and more astounding success. It should be the persistent, unremitting aim of every member of the Company to add as many new names to the roll as possible.

At the meeting of our Board of Directors, July 15, 1889, we authorized President Woglom to engage a competent accountant to examine the books and accounts of the Company, which has been done, with favorable results; a report of the same will be presented.

The question of quarterly assessments which was introduced at the annual meeting and referred to the Board of Directors for consideration, was acted upon by the full board at its regular session of October 21, 1889, and a resolution drawn up (which will be presented and read) that it is not the sense of the Board of Directors that any change be made.

Medical Director Chas. F. Robert's report will be presented at this meeting, though he has been in Europe for the past month, and returned but yesterday. During his absence Dr. Walter S. Mills has acted as his deputy.

The Executive Committee have continued unwearied the duties laid upon them, and have held during the year 41 regular sessions.

We can with the utmost confidence predict that the volume of business as shown by our Secretary's report, and the lucid and satisfactory report of our Treasurer, will far exceed our most sanguine expectations.

The able reports of our officers must impress and more fully convince you that the future progress and prosperity of the Jewelers' and Tradesmen's Company will be more marvellous than in the past.

The faithful work and the courtesy shown us and interest taken in our welfare by the trade journals, THE JEWELERS' CIRCULAR, *The Jewelers' Weekly*, *The Jewelers' Catalogue* and *The Jeweler*, of Chicago, have largely contributed to our success, and we extend to them and severally our thanks.

Fraternally submitted,

CHARLES A. FOWLER,
JOHN C. DOWNING,
SHUBAEL COTTLE,
THOMAS A. YOUNG,
CHARLES F. ROBERTS, M. D.,
SAMUEL A. BALDWIN,
GILBERT T. WOGLOM,
WILLIAM B. KERR,
SAMUEL SONDHEIM,
JAMES A. SMITH,
EPHRAIM S. JOHNSON, JR.,
SAMUEL W. SAXTON.

Dated January 20, 1890.

The Secretary also read the report of the Finance Committee:

FINANCE COMMITTEE REPORT.

NEW YORK, Jan. 20th, 1890.

To the President and Board of Directors of the Jewelers' and Tradesmen's Company, of New York:

GENTLEMEN,—Your Finance Committee beg to report the following transactions for the year ending Jan. 1st, 1890:

Bal. in U. S. Trust Co., Jan. 1, 1889		$3,616 39
Cash dep'd in " Jan. 14, "		940 13
" " Oct. 22, "		500 00
" " Dec. 5, "		1,000 00
" Dec. 31, "		2,500 00
Total		$8,556 52
Less am'ts drawn as follows:—		
	$1,438 68	
	2,406 90	
		$3,845 58
Bal. in U. S. Trust Co., Jan. 1st, 1890		$4,710 94

Signed,

JAS. A. SMITH.
Chairman.

A communication from the Board of Directors in relation to the practibility of making mortuary assessments quarterly, which had been referred to them at the last annual meeting, was read by the Secretary:

To the members of the Jewelers' and Tradesmen's Company, in Annual Meeting assembled:

GENTLEMEN,—Your Board of Directors, to whom was referred the question of quarterly assessments, which was introduced at the last Annual Meeting, beg to render to you as their report thereon the following preamble and resolution, which were adopted unanimously at a regular session of Oct. 21st, 1889, this report to be as of the date and up to Jan. 1st, 1890, the close of our fiscal year:

Whereas, Having deliberated upon the matter, committed to this Board of Directors, of the advisability of having periodical assessments,

Resolved, That it is not for the interest of the Jewelers' and Tradesmen's Company that we make any change in our present plan of assessments for several reasons:

First,—Our present plan provides insurance upon the assessment plan in exact conformity with both the letter and the spirit of the laws of the State of New York, under which we are incorporated.

Second,—We have repeatedly said, substantially, that ours is the natural premium or assessment plan—natural because when deaths occur, then and only then are assessments to be made upon all the members.

Third,—It is unwise to attempt to force the volume of the mortuary fund by either periodical single assessments, or by increasing the assessments by fractions or multiples when deaths occur.

Fourth,—If a system of periodical assessments should be ordered, adapted to current requirements, in time it would become necessary to increase the frequency of the periods of assessing, until said periods attain the frequency demanded by the increasing death rate, up to the maximum death rate which will in time be reached upon our present plan.

Fifth,—Thus it will be seen that the only present advantage to be gained by a forced periodicity would be to enable us to pay our certificates in full.

Sixth,—This apparent advantage is more than offset by the disadvantages accruing from a disturbance of our present well digested plan.

Seventh, and finally,—The proper means to use to enable us to pay our certificates in full should be the same as has been used in all kindred assessment societies, viz: to enlarge our membership so that one aggregate of payments by all the members into the mortuary fund will be sufficient to pay a $5,000 certificate in full.

In this connection it is well to inform our members that to-day we can pay 65 per centum of our certificates, after an existence of but three years.

The Jewelers' League paid benefits increasing from $459.80 to $4.982.50 until upon its twenty-first death it paid its first $5,000 benefit in full, after an existence of 6 1-3 years.

The Commercial Travelers' Association paid 86 death losses, each less than $5,000, before paying its first $5,000 benefit, after an existence of 7½ years.

The Mercantile Benefit Association, allowing for the fact that its assessments of $5 each are two and one-half fold greater than either the Jewelers' League or the Commercial Travelers' Association, did not reach the point of its first $5.000 payment until 9 68-100 years.

Our record, therefore, contrasts grandly with that of these sister societies in its growth, and meanwhile the death benefit is in exact proportiou to the risk assumed by each member, *i. e.*, the risk is sixty-seven per cent., as we can now pay sixty-seven per cent., and the risk will be 100 per cent. when we pay 100 per cent., or our certificates in full.

Dated Jan. 20th, 1890.

The reading of Counsel James M. Hunt's communication was next in order. It contained several proposed amendments, which were acted upon and approved.

To the Jewelers' and Tradesmen's Company in annual meeting assembled.

Gentlemen:—Conformedly with the Constitution, the following proposed amendments are presented to you for adoption, under the advice of our Counsel, James M. Hunt, and for the purpose of making more clear the present provisions of the Constitution.

They are presented under the order of your Board of Directors, and are as follows, giving the whole sections as they are proposed to be amended:

CONSTITUTION.

ARTICLE V.—SEC. 2.—In order to provide for the speedier payment of accruing claims by death, immediately upon the death of a member an assessment shall be made (apportioned as hereinafter provided, and at the rate specified upon the certificate of membership) to provide for the claim, or claims, which may be proven by reason of the next ensuing death, except in the event of two or more deaths occurring at so nearly the same time that an assessment cannot conveniently and regularly be made and collected during the time intervening between such deaths; and in that event, and provided the mortuary fund is insufficient to meet such death claims, the Board of Directors shall cause to be made upon the membership existing at the time of such death or deaths an assessment for such a sum as may be, by the Executive Committee, deemed sufficient to pay such claim, the same to be apportioned among the members according to the age of each member and at the rates specified upon the certificate of membership. The net amount received from assessments, after setting apart twenty per centum to the reserve fund, shall constitute the mortuary fund, and shall be used only for the payment of death claims.

Under no circumstances shall more than one assessment be made upon the members to provide for the payment of a single death claim.

Upon receiving notice of an assessment it is the duty of every member to pay the amount to the treasurer of the company. A notice sent to the last address given shall be considered a legal notification. Any member who does not pay the amount of the assessment within thirty days from the date of the notice, shall forfeit all claims to membership, and shall be stricken from the roll; but such person may again become a member upon payment, within a period not exceeding sixty days from the date of expiration of the said thirty days' limit, of all dues and assessments, subject, however, to the approval of the Executive Committee.

SEC. 3.—In case a death claim is proven while the membership is such that a single assessment at thy prescribed rates, made upon all the members, would yield less than five thousand dollars ($5,000.00), there shall be paid in full satisfaction of such claim proven a sum to be taken from the mortuary fund, which shall bear the same proportion to eighty (80) per centum of the amount a single assessment would realize, that the amount named in the certificate upon which the death claim proven is made would bear to five thousand dollars ($5,000.00).

[Signed] JAMES M. HUNT,
Counsel.

After the reading, Alfred Frank motioned that no longer than sixty days, after expiration of the thirty days' limit for payment of an assessment by members, should be allowed to such persons who, having forfeited, because of non-payment, all claims to membership, desire to re-enter the company. The motion was passed and the clause, "within a period not exceeding sixty days from the date of expiration of the said thirty days' limit," was inserted in last paragraph of Section 2, after word "payment."

Mr. Frank also moved to have the Board of Directors' and Mr. Hunt's communications printed and sent to members. This motion was adopted.

The next business in order was the election of officers, the terms of T. A. Young as First Vice-President, Shubael Cottle as Second Vice-President, Samuel W. Saxton as Treasurer, and Chas. A. Fowler, John C. Downing and Shubael Cottle as Directors having expired, these gentlemen were re-elected to their positions.

Vice-President Thos. A. Young, closed the meeting by offering a resolution of sympathy with Director Chas. A. Fowler, who was recently deprived by death of his mother.



[FROM OUR SPECIAL CORRESPONDENT.]

CHICAGO, January 20, 1890.

One or two seven thousand dollar failures cut little figure as against a hundred mercantile successes, and the failures of Emmert and of Epstein, both of which occurred since my last letter, have occasioned scarce any comment amongst the trade here. In fact, these exceptions but prove the rule that the month of January has witnessed fewer failures in this section of the country than for years past. Emmert was scarcely known outside the limited circle in which he did his business; Epstein was better known to the trade, chiefly by reason of his aforetime connection with the firm of Lewald & Co. His creditors should not have been such, for none of the mercantile agencies gave him any rating.

Collections are surprisingly satisfactory throughout the Northwest. It was feared that the extraordinarily mild weather followed by "La Grippe" would cause many of the weaker brethren to fall by the wayside, but drafts made upon them have either been honored or partial remittances have been made, showing honest intent, and with scarce any exceptions all will pull through. The day of long credits having passed, the jewelers throughout the West are better prepared than ever before to pay what they owe.

In the Cone & Co. failure of January 10 at Cedar Rapids, Iowa, nearly all the Chicago jewelers were caught to a greater or less extent, and the three chattel mortgages, aggregating about $12,000, given the day before, leave little hope for much of a dividend to the unsecured. J. D. Jenkins' failure at El Paso hurt one of the clock companies, but not to any extent.

All during the month rumors have come from our nearby suburb of Aurora to the effect that the watch factory there had surely been sold, and that the $20,000 necessary was raised to add to $100,000, which the purchaser was to personally pay over, but the transfer has not been made nor does it seem much nearer a focus than this time a month ago.

The Chicago Watch Case Company succeeded in having their confession of judgment in favor of Jas. Mayer set aside.

A number of jewelers and opticians, including Otto Young & Co., L. W. Flershem, Louis Manasse and others, have joined in suing collector of customs Seeberger, for damages sustained by excessive duty levied on their importations; it will be some time yet before the case will be tried, and the decision will be looked for with much interest.

John J. Owens, a jeweler and broker, will not soon forget the last afternoon of the old year. Instead of making a sale, which seemed certain, and quite a snug profit, his customer so much admired the tray of watches which he was just then inspecting, that he hit the jeweler over the head with a hammer and tried to make off with the

whole lot. Mr. Owen, although half-dazed, resisted, and the only thing that Camp, his assailant, decamped with was the second finger of Mr. Owen's left hand. Mr. Owen's yells of murder, however, alarmed the occupants of the neighboring offices, and the police, who were called, traced Camp to his room, where he was found in the act of pulling off his blood-soaked clothing.

The enterprising appearance of this birthday edition of THE CIRCULAR notwithstanding, the jobbers are not so busy just now as to be unable to leave their warerooms and desks. Messrs. Allen, Hahn, Knights, Young, Mead, Hirsh, Wallis and others are representing the fraternity of Chicago's jobbing jewelers at the National Association in New York now convened, and the Elgin Watch Company is represented by Messrs. Avery and Cutter; the western agency of the Waltham Company also had a representative in your city in the person of Manager Kettle, and most of these gentlemen will no doubt help to discuss the annual banquet of your Jewelers' Board of Trade.

Mr. M. N. Burchard, manager of Simpson, Hall, Miller & Co.'s Chicago business, will be in New York when this is read. Mr. A. L. Smith, of the Geneva Optical Company, has just returned from a visit to the factory at Geneva, N. Y., and a flying trip to New York city. The principle object of the trip was to arrange for a greater supply of stock for the coming season than the Chicago house has ever before contained, and it bears out the statement of this company that their trade since last July has been greater than for any previous entire year.

Speaking of banquets, that given by C. H. Knights & Co. to their employees on New Year's eve at Kinsley's, was perhaps the most elaborate affair of the kind ever tendered to the employees of one establishment. The mênu cards were in semblance of a watch, bearing on one side the features of Mr. Knights and on the reverse those of W. H. Gleason, who together compose the firm; on one of the inner leaves appeared the names of the forty employees headed by Manager Thearle. The Weber quartet and other professional entertainers in a musical way added to the enjoyment of the evening, and there was no lack of speech-making and of mutual congratulations over the closing of the most presperous year in the firm's history. Genial Tom Bristol was among the speakers; his recent Old World tour giving him ample material to use in response to the toast, "Drummers in Europe."

Mr. Edward Holbrook, the treasurer, and in fact the managing head of the Gorham Manufacturing Company, has just finished a four or five days' visit to the Chicago warerooms. In conversation with your Observer Mr. Holbrook expressed himself as feeling more than satisfied with the past year's business at this end of the line, and he did not seem sorry at finding scarce any goods in the Chicago storehouse. However much Mr. Holbrook may appreciate his own wares, as indeed who does not, it must have been a matter of honest pride to find that the demand of the western trade had robbed the Chicago house of the great stock which it held in the early winter. Manager Prentice, in speaking of the visit of his principal, said a quantity of new patterns would be on the way soon after Mr. Holbrook's return east. Prominent among these new things, photographs of which were shown THE CIRCULAR'S representative, are novel ideas in flat ware, and especially new designs in ice-water pitchers.

THE CIRCULAR has few more enthusiastic friends in the west than Mr. G. J. Corey, manager of the Pairpoint Silverplate Company. Mr. Corey, before assuming charge of the western business, used to travel south for the company, and to use his own words, he "found THE JEWELERS' CIRCULAR everywhere there, just as I do in my western trips now." Continuing, he said, "this has been the biggest year we have ever had, and if there have been any city failures we don't know it, for we haven't lost a dollar in Chicago."

The business of buying up old gold and silver is fast on the increase. Every jeweler has more or less opportunity to purchase old gold, the question with him formerly being was it advisable for him to do so? He has found that it is; very often a sale is made, which would not be if the gold were not taken in exchange, and he has found that if he does not purchase it some other jeweler will, and he thus loses a customer. As to the quality or value of the gold offered, such dealers a Goldsmith Brothers, of 63 and 65 Washington Street, this city, will send the jeweler full directiogs for making acids and testing, and if more advice is needed in any given case, the gold can be sent to them and they will send an estimate of quality and value at once. A twenty-page pamphlet issued by this house will be sent post paid to any jeweler, and they have been doing a successful business in Chicago since 1884.

Morse, Mitchell & Williams, who are the western agents for the E. N. Welch Clock Company, are taking special pride in a collection of onyx and marble clocks, which are sold as equal in both appearance and time-keeping qualities to any of French manufacture. The hand-painted porcelain clocks, which the Welch Company introduced some time since, are still selling by the thousand.

H. S. Peck, of the Waterbury Clock Company, was found busied in going over the record of the past year, which proves beyond any manner of doubt that the demand in the West for clocks, and, Mr. Peck says, for Waterbury clocks in particular, was never anything like as great as now.

Those of our jewelers who are joining in the festivities of their brotherhood in New York will find yet another jollification awaiting them on their return home. The imposing banqueting hall of the great Auditorium will, on February 4th, witness the thirteenth annual banquet of the Jewelers' Association of Chicago, one of the strongest mercantile associations of this country. The arrangements are in the hands of the following banquet committee: A. L. Sercomb, chairman, H. F. Hahn, J. T. Talbot, John Morse and M. A. Mead, ex-officio.

The claim of Lapp & Flershem—"Busiest house in America"—would almost seemed verified by the astonishing figures which appear on another page of this month's CIRCULAR. In December of 1887, when the number of packages shipped by mail, express and freight in that one month figured up the enormous total of over 4,900, this enterprising firm might well have thought the limit of their capacity had been reached, but December of 1888 showed an increase, and December of 1889 caps the climax with a total of 5,535 shipments, which does not include any purchase delivered to city buyers. The *Nameless Catalogue*, original with this house, and sent by them to retail jewelers everywhere, still attracts an increasing number of requests.

Spaulding & Co., whose retail storehouse of jewels *objets d'art* is an establishment in which Chicagoans feel an intense pride, are just now taking their first annual inventory; the figures resulting are sure to be most gratifying, as the volume of sales has exceeded their most sanguine expectations by at least a third; ever since Christmas the store has been thronged with customers daily.

Giles Bro. & Co. announce the completion of their new catalogue on another page of this issue, and you observe, advises every jeweler to send for it. A unique illustration in their advertisement shows the magnetic currents developed on a locomotive as it flys along the steel rails, and it easily demonstrates why the leading railroad companies recommend Giles' anti-magnetic watch shield to their employees.

Otto Young & Co. are of the opinion that the retail jewelers of this country are more personally interested in what the leading jobbing houses have to say in the matter of prices and novelties than in the location to be selected for the World's Fair. Reckon Messrs. Young & Co. are just about right, and there are some prices quoted in their advertisement on another page which will serve as a pointer.

THE CIRCULAR'S OBSERVER.

The Annual Meeting of the Jewelers' League of the City of New York.

THE Masonic Hall, Twenty-third street and Sixth avenue, New York city, on the evening of January 21st, was the scene of the thirteenth annual meeting of the Jewelers' League of the City of New York. Over one hundred members were in attendance and evinced considerable interest in the proceedings, the salient features of which elicited hearty appreciation and eager discussion. Among those present were :

Henry Hayes, J. B. Bowden, John R. Greason, G. H. Houghton, W. H. Jenks, A. A. Jeannot, W. L. Sexton, G. H. Richards, Jr., C. C. Champenois, Otto Heeren, Henry Hahn, George Parks, T. L. Parker, E. H. Brown, J. W. Senior, B. W. Ellison, David Untermeyer, E. Karelsen, C. E. Settle, J. R. Smith, C. V. Peyn, T. B. Hagstoz, Wm. Bardel, L. J. Mulford, D. W. Lapham, C. F. Carrington, R. B. King, W. Appleton, J. F. Minaldi, P. Manchor, H. W. Hiller, W. J. Carron, T. D. F. Myers, A. M. Hoefflmeyer, E. T. Boynett, P. Dunn, Henry Goll, H. L. Street, F. J. Boesse, J. Demott, C. C. Willemin, L. Credner, I. Muller, C. F. Greene, A. Refenberg, G. A. Arms, L. Bonet, W. Persch, L. B. Best, L. F. Schmidt, A. McLeod, A. G. Schwab, W. O. Dickson, S. F. Brogan, J. J. S. Rotan, J. N. Taylor, J. Milleman, W. H. Allurdyce, T. E. Bowne, J. T. Lynch, W. D. Carrow, C. G. Lewis, G. W. Smith, C. J. Fox, J. D. Yerrington, J. P. Snow, A. Kurtzeborn, G. T. Woglom, S. Cottle, F. H. Larter, L. W. Sweet, Isaac Mills, A. E. Lavigne.

Before the convention about twenty-five members headed by President Hayes sat down to a private, a social supper, at 77 Nassau street. An informal affair, the wit of Geo. H. Richards and C. C. Champenois was thoroughly appreciated. Among those who enjoyed the repast, besides those above mentioned, were: A. Kurtzeborn, Henry Hahn, Otto Heeren, John R. Greason, Wm. Bardel, J. B. Bowden, Geo. W. Parks, C. E. Settle, T. B. Hagstoz, Chas. V. Feyn and J. R. Smith.



HENRY HAYES.

President Hayes called the meeting to order at 8 o'clock and announced that the first business was the reading of the minutes of the previous meeting. On motion, this, however, was dispensed with. The president then arose and delivered his annual address, many of his statements eliciting applause from the audience :

THE PRESIDENT'S ADDRESS.

Another cycle of our existence has been completed ; another round of our journies has been run. The way has led through pleasant paths as well as over rugged, toilsome roads ; but at the end, the retrospect is one of satisfaction, and calls for congratulation. Each advancing year subjects to stronger tests the position and endurance of our association ; each twelve months gives stamp of its well doing, of its strength or weakness, and in no portion of its history have there been exhibited more enduring qualities, more lasting features, than the past year has evolved. The loyalty of our members, as well as their ability to meet the demands upon them, adds to the guarantee of the solidity of our institution. These demands have been phenomenally small, and we cannot expect them to remain so abnormal, yet is there any reason to doubt the response that will be made when you are called upon to face the slight increase of demand which must come, and which we all expect? Especially must this be the case in time of increased mortality during the prevalence of an epidemic such as now pervades our land to such a wide extent, and on all sides lays its hand upon the arm of strong men, entering their ranks with increased vigor. Yet, in the face of these conditions, we are stronger and growing in strength.

Our membership does not diminish, our financial reserve makes steady upward strides to the point where all fear of disaster will be allayed, thus demonstrating that the wisest step we ever took was the one which established the reserve fund, and provided for its yearly growth. The slightly increased effort which it calls upon every member to make, has proven to be no perceptible burden in the quarterly pittance contributed by each one to the common fund ; those little moneyed rills which fill the ever widening, deepening stream upon which shall float the ark of strength through coming years of vicissitudes and trials.

That the number of members has not decreaaed is not due to any efforts of the vast majority of our membership to obtain an increase of our roll. A few notable exceptions simply prove the fact that by the smallest trouble on the part of each member our League in one short year would be strengthened for generations, and become one of the largest, as it is one of the best, institutions of its kind in the land. Look around and you will see how rapid the growth of, and how great the might which pervades beneficial organizations promoted by this self-same effort on the part of each one of the order.

You certainly cannot be blind to the advantages which, at the risk of obnoxious repetition, are annually urged upon you ; while by such efforts, not only would you be serving your own best interests, but would confer on your friends in the trade advantages of which they would grant you their benediction.

Your provision for and election last year of an Advisory Board was a measure intended to enlist the co-operation of our membership at large, as well as to fully inform our distant associates of the management and condition of the League ; and to remove any possible prejudices from the minds of others who might wish to avail themselves of the benefits of our worthy institution. How well this Board has discharged the trust imposed in them we cannot know, although it may be fairly inferred that some of the accessions to our membership are the result of their efforts ; but the active aid of every member is invoked for the encouragement of their work.

This is not the place to intrude upon your time and attention with statistical details of the past year's work, or of the prosperous financial condition of our association. These will appear in the reports of your other officers and of the Executive Committee. Suffice it here to say that each expiring year adds to our obligations to these gentlemen, and increases my admiration for their unwearied performance of duties ; as also for their self-denying attention to our welfare that so few of you are aware of. It is no easy task to be ready at all times, in all seasons, to give attention to our interests. It is no sinecure we offer to men with their daily labors to devote extra hours in painstaking care to the many details which they so thoroughly investigate. It is no greed of gain that impels them to perform their duties without fee ; although not without expense, yet an expense generously incurred, and liquidated by these men themselves. Your trust in them has been well placed ; their work has been conscientiously performed.

And now, while doing simple justice to these gentlemen, I must not, at this time, nor could I refrain from the sad mention of the entry in their circle of the last great enemy. Grim-visaged Death has claimed for his own one of their most faithful members, one of our most loyal friends. Among the first on our list of associates, he has been an unassuming devotee of the League. Ever an officer, he failed not in his loyalty nor duty. A man of genial manners and courteous bearing, and prudent counsel, none could be more missed, none more regretted. His was a character most worthy our emulation, most worthy our respect. We cherish in our hearts to-day loving memories of tenderest regard for that noblest of exemplars—an honest man. We weave a chaplet of affection for the memory of an honored friend. We lay this day a laurel wreath upon the grave of our late vice-president, Robert A. Johnson.

The next business in order was the report of the examining finance committee, which was read by Theo. L. Parker. It was adopted and placed on file. Secretary Sexton prefaced the motion to file the report, however, with several words of explanation regarding the beneficiaries of a Mr. Schwette of Chicago.

The business next in order was the report of the secretary and treasurer. On motion, the reading of the report was dispensed with. It had been printed in pamphlet and delivered to each member upon entering the hall. The report was unanimously adopted and placed on file.

REPORT OF THE SECRETARY AND TREASURER.

Amount paid to beneficiaries to 1889	$630,962.70	
Amount paid to beneficiaries during 1889	90,000.00	
Total paid beneficiaries		$720,962.70
The entire current expense of administering the affairs of the League		
For 1886 was		$9,327.00
For 1887 was		7,151 19
For 1888 was		6,841.87
For 1889 was		6,376.92

On January 14th, 1890, the Ledgers, Daily Cash Book, General Cash Book and Reinstatement Book were sent to the office of Chas. E. Townsend, Accountant, for examination. On January 17th the books were returned to the League Office, with the following report :

"The number of the payments for assessments for the year 1889, is shown to be 18,749—that is, upon the Ledger Accounts of the various members of the League the aggregate number of credits against Assessments Nos. 134 to 152 inclusive, number 18,749. By comparing this result with the record upon your book, showing the aggregate of amounts, you will see that totals agree.

CHAS. E. TOWNSEND, *Accountant.*"

Amount on hand January 15th, 1889		$17,766.81
RECEIPTS.		
88 Members' Initiation Fees, at $3.00	$264.00	
88 Members' First Assessments, at $2.00		176.00
Surplus Assessment of 20 Members, at 50 cents	10.00	
Surplus Assessment of 19 Members, at $1.00	19.00	
Surplus Assessment of 12 Members, at $2.00	24.00	
Amount from Reinstatements	1,005.50	
Interest on Deposits at Union Trust Co	95.66	
Interest on Contingent Fund	2,950.00	
Interest on Permanent Fund	335.00	
Interest on Deposit at Atlantic Trust Co	70.01	
Assessments Nos. 129 to 133 (to balance)		1,860.00
" " 134 to 136		16,244.50
" " 137 to 139		16,201.00
" " 140 to 142		16,179.00

Assessment Nos. 143 to 146			21,357.00
" " 147 and 148			10,658.00
" " 149 and 150			10,751.00
" " 151 and 152			10,670.50
Amount from Quarterly Dues		10,679.00	
		$15,452.17	$121,863.81

DISBURSEMENTS.

Beneficiary of J. T. McConnaghy, Lafayette, Ala.; J. Lowenhart, Cincinnati, O.; G. R. Plummer, Providence, R. I.; M. B. Allebach, Danville, Pa.; Elias Morris, Chicago, Ills; Just. Kruckemeyer, Cincinnati, O.; Henry W. Dawson, Dallas, Tex.; D. B. Churchill, Brooklyn, N. Y.; Wm. Hurd, Mason City, Iowa; S. H. Cowell, Cleveland, O.; Emil Young, Johnstown, Pa.; G. W. Ailman, Newport, R. I.; David Johnson, Taunton Mass.; C. A. Pease, Belmont, Mass.; W. H. Schulz, Phila. Pa.; J. Rickesheiser, Cleveland, O.; F. W. Gesswein, N. Y. City; Henry Horwitz, N. Y. City, $5,000 each; total, $90,000.

Purchase of bonds during 1889	$24,334.92		31,863.81
Commissions of Secretary, 3½ per cent, on $104,097.00	3,643.40		27,978.32
			$3,885.49

MISCELLANEOUS DISBURSEMENTS.

Books, stationery and printing	$1,027.35		
Postage and rent of P. O. Box 3,444	622.25		
Rent 170 Broadway, Room 3	400.00		
Gas, ice and office expenses	127.92		
Attorney's fees, $200.00; medical examiner's fees, $14.50	214.50		
Rent of safe deposit box	10.00		
Stenographer, $5.50; protested check, $7.70.	13.20		
Canvassing and advertising	272.00		
Commission of Secretary, 3½ per cent. on $1,322.50	46 30	2,733.52	12,718.65
Net cash balance			$16,604.14

BOARD OF TRUSTEES.

Permanent, $3,500 of N. Y. City and County 6 per cent. bonds (cost)	$4,733.82	
Permanent, $2,500 of N. Y. City and County 5 per cent bonds (cost)	3,272.94	
Contingent, $10,000 of N. Y City and County 6 per cent. bonds (cost)	13,647.95	
Contingent, $10,000 of N. Y. City and County 7 per cent. bonds (cost)	13,145.89	
$25,000 of New York City and County 6 per cent. bonds (cost)	30,970.24	
$5,000 of New York City and County 6 per cent. bonds (cost)	6,707.88	
$10,000 of New York City and County 6 per cent. bonds (cost)	13,325.07	85,803.79
Total cash assets		$102,407.93

Against this amount there is a claim of $5,000, to be paid to the beneficiaries of Albert Schuette, of Chicago, when the court decides to whom the amount is to be paid.

The undersigned have examined the books and accounts of the Jewelers' League, and find them correctly set forth in the Treasurer's Report. They also find that the Bonds as specified are deposited in the Safe Deposit Vaults in the Nassau Bank.

THEO. L. PARKER,
FREDK. H. LARTER,
SAML. AUFHAUSER, } *Examining Finance Committee.*

New York, January 21, 1890.

This was followed by the reading of the report of the executive committee. The secretary announced that he had received a note from Mr. Howe, saying that he had been taken ill and deemed it prudent to go home and thus regretted his inability to attend and read the report. J. R. Greason read it in his stead.

Report of the Executive Committee.

January, 21, 1890.

MR. PRESIDENT AND GENTLEMEN.—In closing the record of another year, your committee for the thirteenth time congratulate the membership on the continued prosperity and the present standing of The Jewelers' League. Please take time to read carefully the printed report of the Secretary and Treasurer. It is the desire of the Committee that each member should fully understand the details of affairs, for with such knowledge will come increased interest and activity.

We close the year with 2723 members, only 7 less than a year ago, and a balance of $97,407,93 in our reserve fund.

Our death rate has been lower than for years past, so low that your committee feel compelled to caution the membership against using this as an inducement in securing new members. We must expect and prepare for a higher death rate, and so state to all applicants for membership. At the present time with the largely increased mortality all over our country, unusually large assessments in the near future should cause no surprise.

We are anxious to secure new members but want only such as are able to carry $5,000.00. To such, we offer safe insurance at cost—a cost only possible, because that through all our history, the time and ability of many of our best men, have been freely given, when called upon, by the fellow members to administer affairs.

Your committee take pleasure in reporting that they have engaged Mr. F. J. Jones as a canvasser for the League, and anticipate a largely increased membership as the result of his labors. They hope that each one of our members will assist him in every way, both by forwarding to the Secretary, names of persons they desire him to call upon and secure as members, and by extending to him their hearty sympathy and co-operation as he may call upon them from time to time.

Your committee have held twelve regular and two special meetings during the year and are indebted to the Secretary and his associates; to our board of examining Surgeons; to our advisory board and membership, and last but not least to our Trade Journals—especially to the *Jewelers' Review*. To them each, the Committee make their grateful acknowledgments. By their courtesy and co-operation, the record of the past year has been made, and we are enabled to look forward into the future with confidence.

HENRY HAYES,
JAS. P. SNOW,
J. B. BOWDEN, } Ex-Officio.

GEO. H. HOUGHTON,
A. A. JEANNOT,
W. H. JENKS.
WM. BARDEL,
JOHN R. GREASON,
GEO. R. HOWE.

This was unanimously accepted and filed.

Upon the announcement by the president that miscellaneous business was next in order, B. W. Ellison arose and commenced the discussion on the half-rate membership question. For the purpose of bringing the matter before the League, he moved that the subject be laid upon the table.

E. H. Brown then read his motion to adopt a half rate membership.

This was answered by W. H. Jenks, who said:

Mr. President: In a multitude of counsel there is wisdom, and the executive board desire wisdom. For two years, so far as I know, every member of the board has desired to establish a half rate within the present League, if it can be done in such a manner as not to jeopardize the interest of the present membership, so that it shall be equitable to all concerned and add to the financial benefit of the League. Although desiring to accomplish this, not one of us, after considering the matter carefully, has been able to devise a plan which will accomplish it, and for that reason I offer, as an amendment to the motion just made, the following:

Resolved, That a committee consisting of five persons be appointed by the chair, three from the membership at large and two from the executive committee, the secretary to be *ex-officio* member of the committee, whose duty shall be to consider, and, if possible, devise a plan whereby a half-rate membership may be organized and incorporated into the Jewelers' League.

Second, Resolved. that the provisions of this plan must be of such a character as to in no wise jeopardize the interest of the present members.

Third, That its provisions must insure exact equities to all persons concerned.

Fourth, That the plan must be of such a character as to insure additional financial strength to the League.

This committee shall report at the next meeting of the League.

Wm. Bardel seconded the motion. The mover of the original motion, Mr. Brown, admitted the amendment. In the discussion which followed, T. L. Parker said as follows:

I think the amendment is very proper; but I don't think it has provided enough members of the committee. I think we should have more than five on the committee. I would suggest that there be at least fifteen. Let us have upon the committee gentlemen who are on both sides of this question; let us have their arguments for and against the proposed plan, and then let the committee present the matter to this League at whatever time is provided.

L. J. Mulford seconded this amendment.

Mr. Bardel objected to Mr. Parker's point; he stated that he had been chairman of the half-rate committee and of the executive committee. and claimed that the more persons a committee contains the less work is effected. His remarks were received with applause. J. B. Bowden spoke to the same effect. Mr. Jenks accepted the suggestion to substitute fifteen for five. In the voting, however, the motion of Mr. Parker was lost. The voting on Mr. Jenks' motion was then in order. Before this was done, however, E. Karelsen desired to know the vote sent in reply to the printed questions sent out to the members at large by the secretary, upon which the latter rose and replied to the effect that 154 had voted to establish a half-rate membership with full vote; and 160 in favor of half-rate membership with a half rate; and 200 in favor of not establishing a half-rate membership. He also informed the audience that he had with him correspondence from gentlemen on the question, and offered to read it. The reading of it was motioned against by Mr. Ellison.

A motion was made to introduce into Mr. Jenks' amendment a time for a special meeting to consider it. Mr. Karelsen asked the president if an amendment could be adopted at any meeting outside the annual meeting. The president considered this an important

question, and referring to the Constitution, read that an amendment could not be adopted at any time except at the annual meeting. After considerable discussion, Mr. Jenks' motion was carried.

S. B. Mann motioned that sixty days' notice be given members, which was seconded and carried. That the secretary should be ex-officio member of the committee was also motioned, seconded and carried.

The president remarked that the chair would take time to appoint a committee, but he knew already that E. H. Brown would be chairman Mr. Brown begged to decline the honor, but the president refused to excuse him.

The next business in order was the election of officers. Henry Hahn nominated Mr. Hayes for president. He being the only candidate, the secretary cast one vote, and Mr. Hayes was unanimously re-elected. Applause filled the building, and the president made the following speech :

Gentlemen : I wish it were necessary to introduce the president to this meeting. I would really be glad to have a new man in this position. I am sure you do not require that I should express to you my sentiments of how fully I appreciate the confidence you have shown in me by this re-election. I thoroughly appreciate it. You could get men into this position who are possessed of the ability to make you an eloquent speech ; you could get men who are possessed of wit, but I have neither of these qualifications. However, since you have elected me, and since I am still alive and with you, I will take the office and do the best I can. I did very little the past year except keep the secretary in order, and the way I kept him in order was very gratifying : He would send to my office and say, "Please sign this check." That check was always for $5,000. That was a very agreeable way to keep him in order. That reminds me that a few days ago I was in the office of a very large old-line life insurance company, and one of the gentlemen present rather jokingly referred to my being an officer in a company, and then he laughed and said : "He calls it an insurance company." I said : "it is a very good insurance company, and there is this about it—if I never did any more good in my life for my fellow-members of the trade I should say I had been instrumental in doing some good, and that is, that we have paid *over three-quarters of a million dollars* to people who have been benefitted, if we don't get any more benefit ourselves. (Applause.) Now, I verily believe that the plan we have adopted for a reserve fund is the right plan. Of course some little amendment may come to us, but in a few years this League will be on a foundation from which it can never be shaken. I have implicit confidence in this League, and I hadn't five years ago. I will ask any man to join this League, because I think it is a good institution. (Applause).

The first vice-president James P. Snow retires and the second Robert A. Johnson having recently died, J. B. Bowden and C. G. Lewis became first and second vice-presidents respectively. J. P. Snow was the only nomination for third vice-president. The secretary cast one vote and he was elected. Mr. Bardel nominated John R. Greason for the position of fourth vice-president. Being the only nominee he was unanimously elected. For secretary and treasurer Mr. Bowden nominated Wm. L. Sexton, and this being the only candidate he moved that David Untermeyer cast the vote ; this the latter did, and Mr. Sexton was elected to the position for the twelfth consecutive time, amid long and loud applause. He made the following speech :

Gentlemen : I thank you sincerely for the honor you have again conferred on me. Eleven years ago, in 1880, down town, in a room of the fire insurance brokers, we were assembled at the annual meeting of the Jewelers' League. There were present fifty-five members, and the gentlemen who were acting as tellers on that occasion were C. Cushing Adams and Isaac Mills. I am very happy to see present to-night one of those gentlemen, Mr. Mills. Eleven times, therefore, have you honored me with this position, and during that time I feel that the League has grown in strength—not because of that action of yours, because of the faithfulness and the loyalty of the membership at large to the Jewelers' League. At that time there was no reserve fund. To-night we have a reserve fund of $100,000 (applause), and a membership, if we include applications now on file, of many more than we had a year ago. (Renewed applause). Gentlemen, these are facts which indicate that this League is stronger now than it has ever been before, and I feel confident, from the spirit displayed to-night, that one year hence we will be stronger, not only in our reserve fund, but in our membership at large, and therefore throughout the country. I wish you all, as I have before, that our future may be as prosperous as our past. (Applause.)

The terms of Messrs. Howe, Jenks and Jeannot as members of the executive committee expiring, these gentlemen were unanimously re-elected. Mr. Greason having been elected fourth vice-president, his recent position in the executive committee was left vacant. Four nominees were named, J. W. Beacham, David Untermeyer, F. R. Simmons and C. C. Champenois. A ballot vote was taken, and resulted in the election of Mr. Untermeyer. The president then named E. E. Kipling, Henry Dreyfus and E. Livingston to compose the examining finance committee. He then introduced Mr. Jones, the League's new agent, who addressed the audience in a few facetious words, which were received with much laughter.

The meeting then closed.



[From Our Special Correspondent.]

Minneapolis, Minn., Jan. 13, 1890.

Just after Christmas, the daily papers blazed sensationally with the report that Eustis Bros. had been robbed to the tune of $4,000 in diamonds, and a very mysterious story was told of a, of course, "beautiful young lady" and "a tall man in a cape overcoat, who looked like an Englishman." It was not quite of whole cloth, the shred of truth in the matter is that a bit of jewelry, worth, perhaps, $40, disappeared during the Holiday crush, and was never seen more.

A. Eshner keeps, or rather kept, a small jewelry store and pawnshop near the Bijou Theatre. Sam Finkelstein came up from St. Paul a fortnight ago, and entered this store as clerk, but has not yet returned from an effort, evidently lasting several days, that of changing a $10 bill. He took $200 worth of jewelry with him, and Mr. Eshner has shut up shop in consequence.

J. G. Mayer has opened a jewelry store at Wintrop, Minn.

At St. Cloud, Minn., George R. Clark Co.'s jewelry store was recently endangered by the firing of some cotton batting in the show window, upon which considerable jewelry was displayed. Mr. Clark, however, succeeded in beating out the flame with his coat, sustaining only a nominal loss of stock.

J. S. O'Brien, of Stillwater, is closing out his jewelry business.

Cook & Hanley, of Lanesboro, Minn., are closing out their jewelry business.

H. T. Sane will close out his jewelry and leave Hastings, Minn.

M. Addison and Benjamin Franklin, surely solid names both, will enter into partnership in the jewelry businesss at Grand Forks, N. Dak. Grand Forks is quite a town. One jeweler sold $900 worth of trinkets the day before Xmas,—not bad that for a Dakota town. A Pierre jeweler, too, says he had a really large diamond trade during the Holidays.

Jeweler Lee, of Estelline, S. Dak., has moved into a new store.

Frost, the jeweler at Sim's Falls, is closing out.

E. B. Woodward, a jeweler from Wahpeton, N. Dak., has bought out G. L. Wood, of Millbank, S. Dak.

E. H. Brown, one of the leading jewelers of Burlington, Ia., assigned on the 19th of Dec., to Lord, Owen & Co., of Chicago, $1,000 ; Fuller & Fuller, Chicago, $500 ; and Dr. H. B. Ransom, Burlington, $5,500.

At Boone, Ia., on Jan. 4th, fire destroyed the entire stock of Chandler's jewelry store.

Henry Allen, of Oshkosh, Wis., now with the Western Electric Company, of Chicago, has invented a magnetic shield for the protection of watches, for which he has received letters patent. Mr. Allen has been offered $5,000 for his invention.

J. J. Estey, of Little Falls, Mon., has bought out G. H. Squire, and opened his jewelry business there.

Henderson.

TRADE GOSSIP.

—On January 1, S. Wolff became associated with Chas. F. Gordon, Shreveport, La. The new firm name is Charles F. Gordon & Co.

—THE CIRCULAR sympathizes with Henry C. Graffs, of Ft. Wayne, Ind., in his affliction caused by the death of his wife, which occurred on January 10.

—Herman Kolbusch, Sr., well known and of high reputation as a maker of jewelers' balances and weights, has moved his factory and office to 59 Nassau Street, corner of Maiden Lane, New York, in the very center of the jewelry trade.

—Louis Sulzbacher and Jerome Sulzbacher, on January 1, formed a co-partnership under the firm name of L. & J. Sulzbacher, for the purpose of conducting a wholesale jewelry business at 91 and 93 Fifth Avenue, Hamilton Building, Pittsburg, Pa.

—F. Willson Rogers has withdrawn from the Wm. Rogers Mfg. Co., and the Rogers Cutlery Co., with which he has been connected for the last eleven years, and shall hereafter have no connection with either of these companies in any capacity whatever.

—John S. Jepson will hereafter represent Jos. Noterman & Co., of Cincinnati, Ohio, on the road, with a full and complete line of their specialties, and will look after the wants of their many patrons. Despite the unfavorable weather for this season of the year to the jewelry trade, Mess. Noterman & Co. are receiving a goodly number of orders.

—Chas. S. Platt, of 4 Liberty Place, New York, has erected an eight-story building at 29 and 31 Gold Street, between John and Fulton Streets, specially adapted for the manufacturing jewelry trade It will be ready for occupancy on April 1, 1890, and will contain all conveniences, such as elevator, steam heat, sanitary plumbing, etc.

—The annual meeting of the Cincinnati Wholesale Jewelers' Association took place on January 2. The members being a little slow in making their appearance, in order to have an election of officers for the ensuing year, it was resolved to suspend the rules, and devote the evening to social amusement. The date for the election has been fixed for March.

—A pretty advertising conceit has been issued by Thomas V. Dickinson, Buffalo, N. Y. It consists of a dozen pages bound in pamphlet form with green silk, and enclosed in a neat cover, which has in its center the word "Gems" embossed in gold. Each page is devoted to an announcement of some special line, the reading matter being printed in fine purple colored ink.

—Wm. Oskamp, of Oskamp, Nolting & Co, will soon sail for Europe. This company will hereafter make a specialty of foreign watches of all descriptions in connection with their large diamond business. All grades of these watches, including the most exact fac simile of the leading grades and sizes of American make will be shown, and all goods will be sold at popular prices.

—The Sterling Company, Providence, R. I., after a most successful holiday season, are now directing their energies toward the development of many new ideas; which will be shown in the productions a little later. The many mail orders which have arrived since January 1 seem to indicate that dealers have carried over but little of the large quantities of goods bought of the company during last season.

—There are still some shops to rent in the new factory of G. W. Shiebler, on the corner of Underhill Avenue and St. Marks Street, Brooklyn. The building is within twenty minutes of the ferries, and the factory is furnished with all modern appliances and improvements. The rents, of course, are much lower than in New York. Prospective removers should address or apply to G. W. Shiebler, 8 Liberty Place, New York.

—By referring to the advertisement of Cattelle & Decker, it will be seen that they are about to devote themselves almost exclusively to the production of novelties in silver goods, of which they produced an infinite variety of patterns last season, in both satin and oxydized finishes. They are now closing out their stock of mounted diamond jewelery which were manufactured previous to the late rise in prices, and buyers will reap the advantage of this fact.

—The calendar pad which S. C. Jackson, the well-known manufacturer of jeweler cases, etc., 180 Broadway, New York, has issued annually for several years past, this year made its appearance, promptly, and in as attractive form as ever.

—Grinberg & Glauber, 30 Maiden Lane, New York, will hereafter be represented on the road by Maurice L. Powers, lately with Falkenau, Oppenheimer & Co, in addition to H. W. Sowade, who has been representing them for some time past. Mr. Powers will cover his old territory. Fred. Glauber will continue to look after the firm's interests in New York. The stock of the house will consist, as heretofore, of a complete line of diamonds, rubies, emeralds, sapphires, pearls and other precious and fancy stones.

—Mr. Jacot, Sr., of the firm of Jacot & Son, met with a severe accident on the evening of December 19. Mr. Jacot was crossing Broadway to reach a passing car, when a cab coming at a furious rate from an opposite direction knocked him down, the wheels passing over his chest and inflicting severe internal injuries. In falling he also sustained severe contusions on his head and arms, though fortunately no bones were broken. The disabled man was conveyed to the Chambers Street Hospital and thence to his home. Erysipelas set in a few days later, but his medical attendants succeeded in overcoming this phase, and Mr. Jacot expects to be able to attend to business within a few days.

—In 1721 Mr. Berger erected a factory at Moselle, France, and began the manufacturing of spectacle lenses and watch glasses. This factory has been continuously making these goods since that time under the management of successive generations of the same name. To-day the firm turns out immense quantities of watch glasses, and no watchmaker needs to be told of the excellence of the W. B & Co. watch glasses. They have no less than 300 different kinds of framed lenses, which will give our readers an idea of the great variety of the productions of their manufactories. Albert Berger & Co., the present firm, have now branch houses in London, England, Paris, France, and at 47 Maiden Lane, New York, where American opticians and watchmakers are supplied with all they need in this line.

—On January 2, the suit of E. Imhauser against O. E. Hausburg for infringement of patent on watchman's time detector, which was in the courts for over two years, was decided in the U. S. Circuit Court in favor of the plaintiff, by Judge Lacombe. Mr. Hausburg, however, intends to take steps to appeal the case. The "Excelsior" watchman's clock which Mr. Hausburg has been manufacturing for the past three months, has had a good sale. It contains the latest improvements in such mechanisms, and is claimed to be superior to the "Standard." They will be sent to any reliable house upon application on thirty days' trial, with privilege of returning them at manufacturer's expense if they prove unsatisfactory. Mr. Hausburg solicits agents among dealers in all parts of the country.

—Horace Mariotte, Ft. Wayne, Ind., offers a reward for information that will lead to the arrest of Louis Burnet, with several aliases, a man about 35 years of age, 5 feet 3 inches in height and weighing about 125 pounds; dark (nearly black) hair; brown moustache; wore on January 10, 1890, about 6¾ black stiff hat, black diagonal light-weight overcoat, dark suit; carried gloria silk umbrella with small gold-plated tip, small valise, small oval rubber match safe, openface stem wind silverine watch with fine adjusted movement, an old 8 karat 18 size hunting gold case (empty) and a rubber-handled double action revolver; talks in a low voice; will say nothing regarding his home or relatives, and is rather familiar as soon as employed; is a fair watchmaker, and will seek employment at some jewelry store.

—The Hartford Silver Plate Co. goes out on the market this season with a larger line of strictly new and pretty designs than they have ever before shown. These designs have made a decided sensation where thus far shown, and are sure to meet with a ready sale. It is not the policy of this company to issue a large catalogue at any time, but they issue a small one, showing a good selection of rapid selling goods, and follow it up with supplementary sheets from time to time, according to the needs of the trade. This method they think meets the wants of the jobbing trade better than the large and cumbersome catalogues usually issued by manufacturers. Several years ago the Hartford Company opened a salesroom in St. Louis, a move which has proved popular with their trade. Their store has become one of the permanent institutions of St. Louis. A new lease covering a term of years has recently been taken of the building at the corner of Eighth and Locust streets, and with enlarged space and facilities they will from this point supply all of their trade west of the Mississippi River.

—Smith, Lesquereux & Co., Springfield, Mass , are one of the oldest and most reliable spectacle manufacturers in the country, and their line is kept constantly up to date.

—The "Eiffel" collar buttons, made by F. I. Marcy & Co., still towers high among the collar buttons, and the enamel back is pronounced by the trade to be a decided improvement over the old style.

—The anti-pickpocket swivel, sold by Atkinson Bros., 927 Chestnut street, Philadelphia, Pa., is one of the best selling specialties the the firm has ever handled. Jewelers will find it a taking novelty to have in the show window.

—We call the favorable attention of our readers to the advertisement of T. B. Bynner in another column of THE CIRCULAR. Mr. Bynner is now one of the oldest jewelry manufacturers in New York, it being nearly forty years since he established himself in the business.

—John E. Hyde's Sons, agents for that artistic and sterling watch, the "Jules Jurgensen," which for more than fifty years has stood at head of the watch trade as a reliable and scientifically made watch, are receiving consignments from time to time from Copenhagen. Their office is at 22 Maiden Lane, New York.

—Stern Bros. & Co., 30 Maiden Lane, New York, have made an important addition to their extensive line of manufactures. They are now prepared to furnish complete assortments of gold, gold filled and silver thimbles, all of which will be of a high standard of quality and finish. Their new line of rings for the spring trade is the most complete they have yet offered.

—On January 1st the well-known firm of H. Elcox & Co., 41 Maiden Lane, New York, was changed to Larter, Elcox & Co. F. H. Larter, who was for seventeen years a member of the old house, becomes the senior of the new firm. The widow of the late Henry Elcox still retains an interest, and the juniors are T. M. Woodland and W. H. Jones, who have represented the house on the road.

—J. W. Richardson & Co., manufacturers of emblems, charms and pins in solid gold, have issued an illustrated catalogue for 1890 of the productions of their factory. It is, as was to be expected from this firm, one of the most complete catalogues in this line to be found in the jewelry trade, and enables a jobber at a glance to see the fac-simile of the goods wanted. This firm sell only to jobbers.

—The business of Pinnell, May & Co., manufacturer of watch cases, 52 Lawrence street, Newark, N. J.. was incorporated on the 10th of January as the Progress Watch Case Co., capital stock $35,000. The incorporators are C. H. Pinnell, J. P. May, John Geiger and Edward Muller, and the concern will continue to manufacture the same desirable line of 14, 10 and 8-karat cases at the above address.

—On the evening of January 3, the jewelers of Bridgeport, Conn., met at the store of G. W. Fairchild for the purpose of organizing themselves into a body for mutual benefit. The Bridgeport Jewelers' Association was organized with G. W. Fairchild as president, W. B. Buckingham, secretary, and G. F. Stevenson, treasurer. The new association decided that all jewelers in its city shall close their stores at six o'clock P. M., Mondays and Saturdays excepted, until December 1.

—Jas. Schawel & Co., gold and silver assayers, refiners and sweep smelters, established in 1865 by the late S. Schawel, inform the trade that shipments of gold and silver bullion receive their prompt and careful attention, and assure correct returns. This firm have recently purchased a new "Becker" assay balance, which is in itself a guarantee of correct and close work. They have also recently embarked in the platinum business, and now have constantly on hand platinum sheet and wire in different gauges, which they offer the trade at as low a price as may be had elsewhere.

—O. W. Bullock & Co., Springfield, Mass., the largest manufacturers of watchmakers' and jewelers' small tools in the country, illustrate on another page of this issue a number of the newest tools of their make. All of these tools are most perfect in form and finish, and are far superior to the cheap foreign importations so frequently palmed off on the unsuspecting. Among the most recent additions to their catalogue are the non magnetic tweezers, made in three sizes, and a combined stem-wind key and case opener Combination tools of this class are a specialty with Messrs. Bullock & Co., the watch makers being indebted to them for the saving of much valuable time and inconvenience. A catalogue will be sent on receipt of card and four cents in stamps.

—N. E. Whiteside, for over twenty years with A. J. Hedges & Co. as salesman, and until four years ago member of the firm, has severed his connection with that house, and has commenced business for himself in partnership with John W. Fahr, recently for four years with Wm. Riker, and formerly with Carter, Sloan & Co. A factory has been secured at 54 Columbia street, Newark, and has already been started up. The new firm manufacture a medium line of 14K. gold jewelry in brooches, scarf pins, sleeve buttons, bracelets, etc. Mr. Whiteside will call upon the trade and see his old friends. This new firm starts out under the most favorable auspices, for Mr. Whiteside is thoroughly known and respected in the trade, and his partner a thoroughly practical jewelry manufacturer.

—Another golden opportunity is offered watch makers by Henry Abbott of stem-winding attachmeut fame. Three premiums of a number 1x2 hard Moseley lathe, of the values of $82, $50 and $32 respectively, will be presented to every jeweler or watch maker who shall fit to watches respectively fifty, thirty and twenty of Abbott's patent stem-winding attachments, or who shall send to the manufacturer respectively twenty-five, fifteen and ten watches of the following varieties : All full plate 18 size watches made by the Waltham, Elgin National, Hampden, Illinois, Rockford, Cornell, Newark, U. S. or Marion, and Tremont watch companies, and for 16 and 18 size Howard, New Model watches ; also the 16 and 20 size, three-quarter plate Waltham, and the 16 and 18 size N. Y. Watch Co., three-quarter plate watches. The reader should send for one of Mr. Abbott's circulars. His address is No. 4 Maiden Lane, New York.

A. J. Logan, Waltham, Mass., manufacturer of hair springs, etc., and watch makers' tools, has recently added to his list of tools vibrators and tweezers for making Breguet springs. The new pattern "Gem Screwdriver," cuts of which appear in his advertisement this month, is pronounced by those who have used it, the best in the market, all things considered. It comes in five sizes, the color of the head denoting the width of the blade. Logan's standard hair spring gauge, jaw and depth gauge, and upright and jaw gauge are now articles of prime necessity with the watch maker. Among other well known tools of Mr. Logan's manufacture are a beat block, a pin vise and a Boss case spring tool. He is also sole agent for Simpson's heater for adjusting watches to heat and sells the Stark main-spring winder. The reputation of the Logan factory, however, rests no less on the small springs of all descriptions for watches, clocks, bracelets, etc., which are turned out there in large quantities and of most perfect temper and finish.

—In June of last year Louis Rougeaux, a manufacturing jeweler of Paris, commenced publishing a monthly sheet of designs for jewelers, entitled "Paris Joaillerie, and consisting of two colored and two aqua fortis plates of original and practical designs. One of the most valuable features about these designs is that they are the work of an experienced jeweler, and hence are capable of execution, many of the ideas being carried out in metal before being committed to paper. As a proof of the high value which is placed on M. Rougeaux's publication in Paris it may be stated that "Paris Joaillerie," received a gold medal at the Paris Exposition last fall, the highest award made to journals of this class. Manufacturers on this side of the water will find it a valuable source of suggestion and comparison, and are invited by the publisher to offer criticisms, as he is desirous of making his paper in the fullest sense representative, and as widely useful as possible. The publication is sold by Louis Bonet, the well-known cameo cutter and importer of precious stones, 927 Broadway, New York, to whom application should be made for terms of subscription and other information.

—Queen & Co., the optical manufacturers, of 924 Chestnut street, Philadelphia, always have something new to offer. This time it is a set of fitting frames, which they have been perfecting for some years. The set consists of seven nickel-plated and finely finished spectacle frames, comprising one of each of the standard sizes of eye from 5 to 00. The bridges are assorted of such heights and inclinations that some one of them will fit any case the optician could possibly have presented. Each bridge is firmly held in its intended position by means of a brace extending from top of same to tops of the eye wires, as shown in the engraving. On one of the lenses in each frame is etched the size of the eye, also a number, which, if used on an order, would designate that a bridge was required of the exact dimensions of the sample used. Horizontally across the lens is a divided line from which the pupillary distance may be read. On the opposite lens is indicated the dimensions of the bridge, which are all combined in the one bridge number above mentioned, and on the vertical line drawn across this lens is a divided scale, which may be useful in determining the height of the bridge required, should the sample not exactly fit.

—David F. Conover & Co., Philadelphia, report an increase in their business during 1889, and state that trade so far this year has been fully up to the average.

—The Harris Ferry Post Office, W. Va., having been discontinued, the address of D. N. Kinkead is now Hockingport, Ohio, which is directly across the Ohio River.

—Charles McIntyre, formerly of the firm of McIntyre, Champenois & Bedell, Newark, N. J., died at his home in that city last month, of pneumonia, aged 58 years.

—J. L. Granbery, 5 and 7 Maiden Lane, illustrate in this issue a very rapid selling flexible imitation onyx bracelet, made both in dead and polished finish. This bracelet is patented, and can be had of the jobbing trade generally.

—The firm of Hansen & Tichenor, 108 West Twenty-third Street, New York, has been dissolved by mutual consent. Mr. Tichenor retires, and the business will be continued at the same stand as formerly by C. E. Hansen.

—Ludwig, Nissen & Co., the enterprising young diamond house of 18 John Street, have closed a year that exceeded their most sanguine expectations. But, as their motto is "onward and upward," they have set the mark still higher for 1890.

—All the salesmen of Hayden W. Wheeler & Co., 2 Maiden Lane, New York, are now out on their several territories, which include every district of the country, carrying with them samples of everything in the line of watches, diamonds and jewelry.

—J. E. Varley, representing E. L. Cuendet, 57 Maiden lane, New York, intends starting on his annual spring trip on Feb. 1st with an exceptionally fine line of musical boxes and novelties. The trade will do well to look over his samples before placing their import orders.

—Bowman & Musser, the well-known jobbers of Lancaster, Pa., have opened a temporary office at 1,006 Chestnut street, Philadelphia, during the renovation of their permanent quarters at 108 North Eighth street. George Grenpel is in charge of the Philadelphia branch.

—E. R. Stockwell, 19 John Street, is just now in receipt of many orders for hunting trophies and Masonic badges. He is ready at any time to submit designs and estimates for all special orders for work of this kind, and his facilities for the proper execution of it are unsurpassed.

—The Gorham Manufacturing Co.'s extensive new factory in Providence is very near completion, and contracts have already been made with the Edison Electric Light Co. for an electric plant of 2,600 incandescent lights. There will be no other means whatsoever of lighting the factory.

—The partnership heretofore existing between S. J. Frasse, A. H. Briggs and T. S. Wells, under the firm name of Frasse & Co., on Dec. 3, 1889, expired by limitation. A new partnership, under the same firm name, was formed by H. F. Frasse, A. H. Briggs and S. J. Frasse who will continue the business at the old stand, at 92 Park Row, New York.

—The Chalmers-Spence Co. note an increased demand for their various styles of patent asbestos soldering blocks They manufacture special blocks for soldering all kinds of jewelry, watch cases, spectacles, &c., and all parties interested should correspond with them. Jobbers would doubtless find it to their interest to carry full lines of such articles.

—The new mainspring winder invented and manufactured by John Stark, the well-known lathe maker of Waltham, Mass., is meeting with the unqualified approval of all who have tried it, and large orders are being booked. It is especially recommended for the ease with which it can be adjusted to any size of mainspring, and hence is just what the repairer wants.

—Aikin, Lambert & Co., 23 Maiden Lane, New York, manufacturers of pens, pencils and novelties, and dealers in watches, jewelry, etc., are about to start out some of the travelers in their pen and pencil department to their several territories. A. S. Canney will revisit his old territory, the far West and Canada; M. F. Thornton will make a trip among his old friends in the Middle and Western States; W. A. Farrell will take the road again for this house in the South and Southwest, and other salesmen will shortly follow. The firm are enjoying a good business, the factory running full time to keep pace. The improvement in pen making recently introduced, and fully described in THE CIRCULAR, has taken very well with the trade, and the manufacturers continue to apply it to their full line.

—Charles Jacques, the manufacturer and importer of clocks, 2 Maiden Lane, New York, arrived in Paris, on Jan. 1, on *La Bourgogne*. He was for eight days after his arrival indisposed with the omnipresent "grippe." He is expected home by Feb. 10, and he will bring with him an extensive number of new samples in every variety of imported clocks for the season of 1890.

—J. B. Wood, representing Charles F. Wood, of 169 Broadway, New York, sailed for Europe on Dec. 24th. Mr. Wood's usual time for starting on his buying trip is immediately after the holidays, but the "grippe" delayed him this year. He visits all the important European marts of precious stones, and from now on during the year will be shipping to the New York house consignments of these gems. Charles F. Wood's card will be found in another column.

—Leo Wormser, manager of the New York office of the Julius King Optical Co. has returned from his western trip to Cleveland and to Louisville, feeling much recuperated and ready to tackle 1890 and come out further ahead than he did with 1889, which was a big jump over 1888. In the five years during which Mr. Wormser has looked after the interests of the Julius King Optical Co. in the east, he has worked like a Trojan and has had the satisfaction of seeing the business grow annually with rapid strides.

—The Wm. Rogers Manufacturing Co., Hartford, Conn., have just closed one of the busiest years in their history, and are making unusual preparations for the new year. The plant which they recently purchased at Norwich Conn., for the manufacture of steel blanks, etc., is now fully equipped with every facility for turning out these articles in large quantities and of high quality. This plant will give the Wm. Rogers Co. a very great advantage which their customers will share. The Wm. Rogers goods are distinguished by the anchor trade mark, one anchor denoting the ordinary plate and the double anchor Rogers denoting the very heaviest and best quality of plate they make.

—There are very few watches that enjoy so enviable a reputation for sterling merit and that are so widely known as the Vacheron & Constantin watches, of which Charles Leo Abry, 41 Maiden Lane, New York, is the sole American agent. The trade-mark, composed of the words "Vacheron and Constantin," forming an oval, with a star between them, is familiar and respected by almost every watch dealer in the country. The history of the house of Vacheron & Constantin is most interesting. It is one of the oldest in the watchmaking trade of Geneva, Switzerland, having been established in 1810. It claims to be the originator of the application of machinery to watchmaking as far back as 1838. All parts of its watches were made by machinery on the interchangeable system. In 1840 the Geneva *Société des Arts* presented to the firm a commemorative gold medal as a token of their high appreciation of the important progress realized. As indicative of the merits of the Vacheron & Constantin watches, it is also of interest to know that in a forty-two day trial by the Yale Observatory, in five positions, and in oven and refrigerator, the Vacheron & Constantin movements showed the highest percentage of accuracy. These watches are made to fit all sizes of American cases, hunting or open-face. Mr. Abry is always pleased to furnish further particulars, price lists, etc.

—The Alvin Manufacturing Co., of Newark, N. J. have just completed a very busy season. They have been driven to their utmost capacity to supply the demand for their Alvin ornamentation ware, which has received a most flattering reception from the trade throughout the country. They have in preparation a great many new shapes and styles in this handsome ware. Among some of the new articles for the coming season will be: Water and cream pitchers, champagne tankards, lamp shades, sugar bowls and various other wares suitable for the spring trade. In their silver novelty department are shown several new designs in cigarette and match boxes, plaster cases, pen wipers, book marks and various other small silver wares now so popular. Their designs, even in the smallest and most insignificant articles, show great originality of conception. Although doing business for only two years they are compelled to enlarge their capacity again for the third time since starting in business. The Alvin Co. has recently sent a notice to the trade throughout the country, a copy of which appears on another page, informing the trade that they are the sole owners of Patent No. 333,697 issued January 5th, 1886, which patent fully covers their process of ornamenting non-metallic articles by covering them with a deposit of pure silver or other metal by electrolysis and afterward cutting away a portion of the covering for the purpose of revealing the ground work. Work made under this patent is what is now so well known to the trade as Alvin ornamentation. They are fully determined to protect their rights in this matter.

—L. & M. Kahn & Co., 10 Maiden Lane, have made a valuable addition to their force of travelers in the person of Fred. Roth for a number of years with Bruhl Bros. & Co.

—In his usual rounds among the trade, THE CIRCULAR reporter called at the office of the Spencer Optical Co., 15 Maiden Lane, and learned from them that the aluminum spectacles and eye glasses are having a great run, owing to their lightness, which exceeds that of any other material now in use. The company are prepared for a busy year in all their lines, both staple and special, and state that if '90 ends up as well as it starts of, they will be perfectly satisfied.

—The Crescent Watch Case Company, fully realizing that the objectionable point of a gold-filled case is the beveled faces opposite the joints, which have hitherto been merely gilded instead of covered with a plate of gold, have in their cases fully overcome this objection, and the bevel of all joints in their cases has a covering of gold of the same thickness as the rest of the case. Thus Crescent cases will not discolor at the joints.

—J. Eugene Robert & Co., 30 Maiden Lane, desire to call the attention of the trade to their complete stock of movements fitting American cases, all of reliable quality, and some grades in gents' sizes being highly adjusted The firm also makes a specialty of complicated watches at prices within the reach of all. Their products recommend themselves as shown in the last exhibition at Paris, where they carried off the highest honors.

—The Roy Watch Case Co., 3 Maiden Lane, have adopted a style of advertising peculiarly their own. They issue weekly bulletins of all the styles of cases they are able to furnish at immediate notice. This they find a very practical and useful method of bringing their goods before the trade, and both jobbers and retailers would do well to scan their advertisements regularly. They sell only to the jobbing trade, but the retailer ordering goods so advertised through a jobber is assured of prompt delivery.

—Koch & Dreyfus, 22 John Street, report a gratifying increase in their business since their removal to New York. This increase has been marked even in the old territory of the house, and to meet its requirements they have found it necessary to add to their force of travelers, Of the large lot of No. 60 Trenton watches recently purchased by the firm, a portion are still left, which they offer at remarkably advantageous terms, advertised elsewhere in this issue.

—Leon S. Hydeman will from Feb. 1 represent F. P. Locklin & Bro., 206 and 208 Canal street, New York, with a full line of gold and silver mounted canes and fine silk umbrellas. The lines will consist of unique and artistic designs in novelty, etc. The Messrs. Locklin's advertisement appeared twenty years ago in the first number of the JEWELERS' CIRCULAR, and the firm as now constituted have been steady advertising patrons of the CIRCULAR during the intervening years. This speaks volumes in favor of the CIRCULAR as an advertising medium.

—Cross & Beguelin, the widely known jobbers and importers, 21 Maiden Lane, New York, say that while the sale of the cheap nickel American watches was comparatively slow during the year just gone, their centennial watches, of which they are manufacturers, have boomed along, orders for them being far ahead of their ability to supply them. The firm during the past month were in the throes of stock taking and buying, and the first of February finds them with full new lines of every variety of goods needed by jewelers and watchmakers. In jewelry, everything in all the new designs in the market has been bought, and is now ready for the inspection of the trade. In timers a large trade is anticipated. Facilities at the factory have been increased to accommodate the demand which has been steadily gaining on the output.

—The latest double lever sleeve button is the "Whipsaw." The supposition "that the latest must be the best" is not the only ground for thinking that this button contains qualities which place it on a par with the best double lever buttons now on the market. The writer has seen the button and had its working explained to him. It can easily be adjusted and removed without injury to the cuff; it sits close to the cuff, and is strong and reliable. The manufacturers, Howard & Son, Providence, R. I., have placed it upon the market to accommodate a few of their patrons, and we feel confident in predicting for the novelty a general popularity. It is their intention to make the "Whipsaw" in as many designs as they apply to their celebrated American lever, namely, over 800. Samples may already be seen at the firm's New York office, 176 Broadway, where George W. Parks, their genial representative, will be pleased to show them. By referring to illustrations contained in the advertisement of the Messrs. Howard the reader will readily understand its principle.

—Hollinshed Bros., jobbers, 806 Chestnut Street, Philadelphia, report an increase of thirty-three per cent. in their sales over those of the preceding year, which is but the legitimate reward of industry, trained experience in the needs of the trade and fair dealings with customers. They have just mailed to the trade a handy little calendar souvenir, which is neat and unobtrusive enough to find a permanent place above the workbench of every watchmaker.

—The firm of Downing, Keller & Co, 8 Maiden Lane, have added greatly to their line since the recent reorganization. In onyx work they long ago attained a high reputation in the trade, but this is only one of many specialties with them now. Their line of brooches, pendants, rings, etc., in diamonds, pearls, turquoises, opals and sapphires is most complete and thoroughly new and artistic in design. Retailers catering to the fine trade will find their samples well worthy of careful inspection. As regards terms the house is most liberal, and is glad to state that their efforts to please are being appreciated by their customers.

—The R. Wallace & Sons Manufacturing Co., of Wallingford Conn., are fitting up a very handsome store at No. 3 Park Place, New York, where they will have much better facilities for exhibiting a full line of their well-known wares in sterling silver, plate and nickel silver than they had at No. 21 Park Place. The cabinet work is being done by B. & W. B. Smith, of 220 West Twenty-ninth street, New York, which is a sufficient guarantee of its excellence. The store will soon be completed and Mr. J. W. Sisson, representative of the company, will be pleased to have his friends and customers call as early as possible and inspect the new quarters.

—The annual meeting of the stockholders of the Metropolitan Burglar Alarm Co. was held in the office of the Jewelers' Security Alliance, on January 28, most of the present stockholders being represented. The reports presented by the officers showed that from a condition of absolute bankruptcy, eighteen months ago, the company has developed into a flourishing condition, with prospects continually brightening. The following directors were elected for the ensuing year: Wm. R. Alling, Henry Hayes, James C. Aikin, David Untermeyer, G. G. Frelinghuysen, Wm. H. Ball and Ludwig Nissen. After hearing the reports the stockholders passed a vote of thanks to the president and the executive committee.—Wm. R. Alling, president; Henry Hayes, treasurer, and Ludwig Nissen, secretary—to whom was ascribed the credit for the very encouraging state of affairs.

—J. T. Scott & Co., Maiden Lane, New York, are hard at work getting their salesmen ready to start out to their several territories. It is expected that by the 10th inst. they will all be out with samples of complete new lines of goods, J S. Rowe, formerly for a number of years with Morrill Bros. & Co., Boston, will have charge of the firm's New England trade; Fred. Eason will continue to travel through New York State; P. F. Courvoisier will see his old friends through Ohio, Indiana and Kentucky; D. W. Cook will book orders in his old territory—Northern Ohio, Michigan and Iowa; Tom Anderson will take care of their interests in the far west and on the Pacific coast, and A. F. Gow will represent them in the Southern States. For the past month the firm have been busy assorting their stock and expect to show their customers a large line of the latest novelties in every class of jewelry, watches and diamonds needed by jewelers.

—The "Princess" ring is so widely known that even thieves are cognizant of its existence and excellent qualities. An alleged swindler, who gave his name as William Pendlebury, last week called on H. B. Sommer & Co., Philadelphia, Pa., and presenting a card of introduction, stated that he was about to open a jewelry store and desired to be shown boxes. After selecting some stock Mr. Sommer accompanied him to W. H. Shaefer & Co.'s office; while there Pendlebury said that an initial ring that he wore was very tight. Mr. Shaefer offered to saw it off. He did so and loaned the supposed customer a "Princess" ring while he repaired the other, evidently a "Princess" ring itself. Some time since a swindler entered Baumer's store at Omaha, Neb., and obtaining one of Mr. Baumer's business cards wrote on the back of it an order for some jewels, including three "Princess" rings, and presented it to Sol Bergman & Co., jobbers in the same city. The manufacturers of the "Princess" rings are getting out a large number of new designs, which for beauty eclipse anything they have produced before. The manufacturers in producing these superior designs have in mind the idea that the "Princess" leads all initial rings, and intend to prove their assertion by both advertising and the merit of the goods. The "Princess" initial rings are manufactured by a reliable house of long and reputable standing, and not by an emphemeral manufacturer who is here to-day and gone to-morrow.

THE WHIPSAW.

PATENTED DECEMBER 31, 1889.

BEST OF ITS KIND.

Unlike many ***double*** lever buttons, it can be adjusted and removed without entirely destroying the cuff.

The principal of the Whipsaw is familiar to every practical jeweler, and is rendered more effective in this button by a spring combination.



OPEN.



CLOSED.

NOTE.—To accommodate a limited number of our patrons, we have introduced the Whipsaw action, and while we can confidently recommend its being the most desirable and practical of **DOUBLE** lever buttons, we cannot say that it equals or even approaches

THE AMERICAN LEVER,

the demand for which has increased steadily in face of a legion of competitors.

HOWARD & SON,

NEW YORK:
176 Broadway.
—
Samples Only.

Head Office and Works:
7 EDDY ST., PROVIDENCE, R. I.

BOSTON:
403 Washington St.
—
Samples Only.

George C. Booth, representing Hutchison & Huestis, is now in the west calling upon his many friends in that section with as fine a line of fancy rings as were ever laid before the jobbing trade.

—Max Meyerheim now represents C. Cottier & Son, 171 Broadway, New York, in the eastern market, with all goods in their lines, which consists of full assortments of fancy, precious and semi-precious stones.

—Fowler Brothers have the sympathy of the trade in the bereavement which they have sustained by the death of their mother, which occurred on January 19, at East Fishkill, N. Y. The funeral was held on the 21st.

—Much sympathy was last month expressed by the trade for Leroy W. Fairchild and his sons, of the Leroy W. Fairchild Co., who on June 8 were bereaved by the death of Mrs. Leroy W. Fairchild, wife of the senior member of the firm, in the fifty-third year of her age.

—John P. Bonnett, the plater and colorer of North Attleboro, Mass., makes a specialty of watch cases, and he guarantees his work to be superior in quality and more durable than any other in the market. Retail jewelers who have jobs of this sort are advised to give Mr. Bonnett a trial.

—Albert Lorsch & Co., 37 Maiden Lane New York, announce that they have prepared for the spring trade an unusually complete and attractive stock of diamonds, rose diamonds, emeralds, sapphires, pearls, moonstones, garnets, and all other varieties of precious, fancy and imitation stones.

—The Circular is indebted to J. G. Cheever & Co., North Attleboro, Mass., for a handsome cardboard calendar bearing a reprint of Millet's famous picture, "The Angelus." The J. G. C. & Co. chain is kept constantly before the trade both by its intrinsic merit and by the judicious use of printers' ink.

—The fancy pieces of richly colored glass, handsomely mounted in plate, which the Pairpoint Mfg. Co. are now making a specialty of, are proving one of the most attractive and salable lines, in the market, particularly the lamps, cracker dishes and nut bowls. The increase in their bnsiness will necessitate large additions to their plant which they contemplate making in the spring.

—The sale of the "Shakespeare Bracelet," F. H. La Pierre, 18 East Fourteenth Street, patentee and manufacturer, continues unabated, orders pouring in from all parts of the country, The patentee is engaged in energetically following up infringers upon his rights, and the trade should therefore be careful to buy these popular trifles only of the inventor or his licensed agents.

—The factory of F. M. Whiting & Co., silversmiths, North Attleboro, Mass., is busy turning out novelties for the spring trade, including in addition to their long list of small silver novelties to be seen on another page, a fine assortment of new patterns of small hollow ware, now so popular and salable. The goods of the F. M. Whiting Co. have the reputation of being quick sellers, and the designs they exhibit this season are no exception to the rule. Mr. F. M. Whiting, of the firm, is recuperating from the "grip" in the mountain resorts of North Carolina.

—The four travelers of M. B. Bryant & Co., ring makers, 10 Maiden Lane, New York, have started out for their respective territories with trunks well stocked with those brand new designs that M. B. Bryant & Co. have a faculty of turning out at all times and seasons. Frank W. Harmon takes the east, Louis E. Smith returns to his customary route in the west and southwest, Wm. L. Supple will again brave the terrors of the northwest, while the nearby trade will be looked after by T. M. Kortright, recently manager for Mac kinney, Smith & Co., of Providence.

—S. F. Merritt, manufacturer of eyes-glass holders, etc., Springfield, Mass., is one of the veteran jewelers of the country. He began his apprenticeship with Arthur, Rumrill & Co., in 1835, in Reade Street, New York, and remained with them until he removed to Springfield shortly before the breaking out of the war, and took charge of what were known as the "water shops" of the United States government. About twenty years ago he started in business for himself, making a specialty of eye-glass chains, hooks and guards, etc. Now he is probably the most widely known maker of these goods in the country, many valuable improvements in manufacture and style being due to his ingenuity and enterprise. His latest invention is the combination eye-glass holder and hair pin advertised on another page of this number. Though a veteran in years, Mr. Merritt can still keep pace with the youngest. He can not only make goods, but when he takes his sample case and boards the express for New York, he can sell goods with any of the "boys."

Hearn & Braitsch, the cane and umbrella head manufacturers, of Providence, R. I., have rented the shop recently vacated by A. B. Day & Co., who retired from business. and are cutting through the partitions and fitting it up for a special department of their business. The growth of the business of this young firm has been phenomenal. Starting only three years ago they have repeatedly found it necessary to add to their facilities until at present they employ about 140 hands. They have removed their New York office from 416 to 415 Broadway, Baltimore and Ohio building, where they will have more room for the display of their large line of samples.

The S. Cottle Co., 860 Broadway, New York, manufacturers of fine jewelry, on January 21 received a design patent on the beautiful purse illustrated in their advertisement. In the specifications it is stated that the design is intended to be applied to a purse for carrying money or other small articles. The lower portion is in the form of a bowl, while the upper is of a reticulated appearance, and is composed of woven fabric. The bowl may be highly and variously ornamented. This novelty is made in gold and silver and in a large number of designs. The upper portion has already been made of material of eighteen different colors, and altogether the trinket is one of the most attractive that the trade has seen for some time

—Mathey Bros., Mathez & Co., the well-known manufacturers and importers of complicated watches, 16 Maiden Lane, New York, entered the new year with the determination to supply amply all kinds of complicated watches. During 1889, orders for such watches were so plentiful that the firm ran short and was unable somewhat to satisfy the demand. They have increased their facilities at their factory at Brassus, Switzerland, to produce these goods which have attained a remarkable popularity, by reason of their practical construction and fine workmanship. Mess. Mathey Bros., Mathez & Co. do not enter into competition with the manufacturers of cheap goods, though they claim that their products are very moderate in price, when we consider their excellence.

—The annual dinner which Carter, Sloan & Co., have tendered their salesmen, bookkepers and factory foremen for a number of years past, took place, on the evening of Jan. 15, at the hostelry of Cable, Bailey & Co., on Broadway. About twenty-five gentlemen, headed by A. K. Sloan, W. F. Carter, Geo. R. Howe and C. E. Hastings, sat down at 1 o'clock to an epicurean repast, which had been specially prepared for the occasion. The tables were decorated with fresh cut flowers and the room had the appearance of a miniature Jewelers' Association banquet at Delmonico's. During the three hours at the table a thoroughly enjoyable time was spent by all present, and when at 9.45 the feasters arose to go home, neither did the affairs of State nor the question of prohibition amendment worry their contented minds.

—Undoubtedly no collection of jewelry offices in this country are so attractive, from an architectural point of view as those in the new Corbin building, 192 Broadway, New York. Each firm seems to have exerted its utmost endeavors, and to have stinted no expense in making its office pleasing and bright in appearance. Perhaps none has succeeded so triumphantly as the Brooklyn Watch Case Co. For some months past decorators, tilers, trimmers and other artisans have been busy improving the original structure. Upon entering the offices one is fascinated by the play of soft rich colors that every item bespeaks. The ceiling consisting of a series of low arches is beautifully decorated of light harmonious colors in delicate designs in the French style. The flooring is covered with small whitish grey tiling with variegated tile borders. The refined colors of the embossed wainscoting and the roughly finished walls harmonize perfectly. The borders of the cornices are in gilt. The trimmings, partitions, furniture and railings are of bright finished cherry, and the glass of the partitions is crystalized, producing an attractive effect. Rugs, ruggets, etc., cover the floor. President Parsons' private room is is a marvel of artistic architecture and decoration; hand-painted wreaths of flowers natural colors ornament the ceilings; the walls have wreaths of soft brownish color, in low relief, and the flooring is of variegated tiling. The company cordially invite the trade while visiting the city to make their headquarters at their sumptuous offices. The volume of the Brooklyn company's business during the past year exceeded that of former years, and prospects for 1890 are bright. The success of the "Granger" case, for the short space of a year it has been on the market, is unprecedented in the company's history. No case of the company's production, not even their celebrated "Eagle" has reached such a large sale in the same time. New designs are constantly being gotten out. Dealers should be on the *qui vive* for the "something new" which the company are busy getting out, and which will be announced shortly.

The demand for the "Seamless" chains manufactured by Kent & Stanley, Providence, has been steadily on the increase during the past year, and with the arrangements completed last fall for the distribution of these goods in European countries their large plant will henceforth be taxed to its utmost to supply the demand. The "Seamless" chains have become a staple here and they soon will be on the other side of the water.

—William F. Nye, the watch and clock oil manufacturer of New Bedford, Mass., some two years ago tried the experiment of refining his oil during the extreme cold of the winter months at a point near the Canadian border in northern Vermont. The temperature is very low there, and by taking advantage of the coldest snaps, Mr. Nye succeeded in producing an oil which is capable of standing all possible tests, and is claimed by the manufacturer to be the finest watch and clock oil in the market. Improvements in the refining process have been made from time to time, and so well have the trade appreciated his efforts to produce an absolutely reliable oil, that Mr. Nye finds it necessary this year to provide a stock of 2,000 gallons to meet the demand His son, Mr. Mortimer Nye, who is superintending the Canadian refinery, writes most encouragingly of the weather and other conditions influencing the process, so that the watchmaker is assured of an abundant supply of these celebrated oils of even better quality than former stock.

—It has been proven beyond a doubt, by actual use, that the Anti-Magnetic Shield does protect a watch from the ever present dangers of magnetism on the railroad, in the telegraph office and electric light and power plants, and thousands in the above occupations will cheerfully testify to the shield's efficiency in securing to them good time where all other devices have failed. The fast increasing use of electricity in multiplied forms, bringing many additional thousands within its subtle influence each year, makes it imperative for many of them to seek protection for their watches, as it is impossible for a watch to keep time when under the influence of magnetism (which is only electricity manifested in steel). The tried and proven shield affords that protection. The late Paris Exposition tested the shield and granted it a medal for effective and permanent protection of watches against magnetic influences, which caps the pyramid of evidence already offered. The inventor, C. K. Giles, could ask no fuller endorsement than this.

Among the Watch and Clock Companies.

—The "Dueber-Hampden Manufacturers' Association and the Dueber Jobbers' Association" seem to be on deck *to stay*.

—None of the officers of the Dueber Hampden works were in New York during the late National Association meeting.

—Watchmakers desiring an inexpensive practical demagnetizer, can get one by remitting three dollars to A. C. Smith, 177 Broadway, New York.

—The elegant carved cherry mantels for the Dueber offices in Canton, Ohio, are certainly among the finest speciments of wood carving in America.

—The Hampden factory shut down on Christmas and New Year's day and January 2. The demand for their adjusted watches has never been so great as at present.

—The Peoria Watch Co. are now turning out forty finished 15-jeweled adjusted movements per day, and expect very shortly to improve their facilities and increase the output.

—The Peoria Watch Co. have just been putting in a new damaskeening machine, and have placed in operation five new Russom's automatic lathes, for which they purchased a shop right.

—The special agents of the Dueber-Hampden Co. seem to be highly satisfied with the volume of their business in 1889, and claim a large increase over any previous business year in their history.

—An electric motor was last month placed in the dial furnace room of the Elgin factory, and is connected with the electric light wires. It will be used to run the fans in the new compound gas furnaces.

—The fine watch movement in 16 size made by the Columbus Watch Co., No. 47 in Hunting and No. 87 in open face, with centre hole jeweled and fine adjustment is attracting considerable attention from the trade. This watch is specially adapted for use by railroad men, and is made with 24-hour dial when desired. The Columbus Company report a decided increase in the demand for adjusted movements of gents' sizes for use on railroads.

—Nearly 10,000 15 jewel watches were turned out by the Hampden Watch Co. in December. This is believed to exceed the amount of similar grade goods ever turned out in the same time by any American Watch factory.

—The Dueber watch case works, after a two weeks' vacation, which a good many improved to visit Cincinnati, started up with full ranks on January 13. It is understood that complete watches will force a large part of this years' product.

—The Trenton Watch Co. have notified the trade that they will place a Hunting, 18 size movement, in the market about February 15th. These movements will be made in gilt and nickel, at same prices as their present openface movements.

—In closing up last year's business, the Manhattan Watch Company find that they are well ahead. The company during the year made over 130,000 watches, and are now behind orders on stop-second movements in gold filled and oxidized silver cases.

—Robbins & Appleton have made a change in the system of billing their ladies' movements. The cases and movements are now billed separately, whereas formerly they were billed together. A complete list of the ladies' movements of their make with descriptions will be found on another page.

—The Hampden Watch Co. have placed on the market a new line of 15 jewel nickel movements in 18 size, called in the "John C. Dueber," adjusted to heat and cold; also the "Dueber," not adjusted, but otherwise the same as the "John C. Dueber" and the "D. W. Co." These new movements make the "Duber Hampden" line in 15 jewel nickel watches complete.

—Manhattan stop second watches were used for timing the arrival at Jersey City, N. J., of Nellie Bly, the New York *World's* "globe trotter." Robert Stoll, the well-known badge maker, of 19 John street, New York, was one of the timers. The Manhattan Company's stop second watches in engraved gold-filled cases are among the most popular low-priced watches in the market.

—Word reaches us from the Otay watch factory to the effect that it is now under the control of a sydicate representing $8,000,000, composed of the Hon. Frank A. Kimball, the National City millionaire; E. W. Morse, the San Diego millionaire, and other prominent bankers of San Diego; that the factory is now running night and day, and watches will be on the market in sixty days; and that additional buildings are being built to four times the size of its past capacity.

—The Illinois Watch Co. having withdrawn from the National Association of Jobbers, will hereafter dispose of their movements through special jobbers in all parts of the country; so dealers who have heretofore been unable to obtain this company's goods through association jobbers, can now have their wants promptly satisfied. The company has just placed upon the market, and have ready for delivery, an entirely new model openface 18-size pendant set movement. It has straight line escapement, and the barrel is covered by a barrel bridge, which enables the watchmaker to readily remove the barrel and repair or put in a new mainspring.

—The watches and clocks manufactured by the E. Howard Watch and Clock Co., of Boston, have always had a high reputation for accuracy and reliability. In their advertisement they offer some very convincing proof of this fact. As showing the perfection with which the Howard Regulator performs its work in railroad service a table is given of the rating of one of these clocks in use on the Erie road at Attica, New York. The letter of General Greeley, of Arctic fame, is also worthy of attention. He carried one of the Howard watches with him on his famous expedition, and speaks in the most unqualified terms of its performance under these trying circumstances. Testimonials of this kind, from official sources, are more valuable than volumes of mere assertion, and the Howard Co. has no end of them.

—The United States Watch Company, Waltham, Mass., have just concluded a contract for the erection of a central building 50x70 feet, four stories high, to be built of dressed brick with granite trimmings, the roof to be in the form of a dome, and also for a wing three stories high and basement built of the same material. The contractor agrees, under a penalty, to have the work completed by Sept. 1st. The construction of machinery for the new building is being pushed forward, and it is expected that it will be ready by the same date. At present the factory is turning out more than 100 watches per day and contracts for an average of 200 watches per day during 1890 have been taken for delivery during the current year. At the recent annual meeting in New York of the jobbers in American watches, reports from all over the country concerning the company's movet

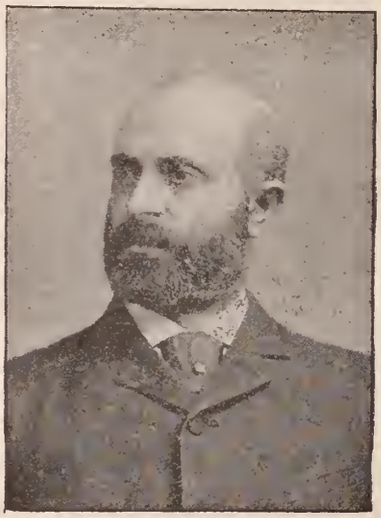
ment were of a most flattering character, one of the largest concerns admitting that, next to their goods, these were the finest and most perfect in the market. The company will remain another year at least with the manufacturers who co-operate with the jobbers and the case makers, though they have received strong inducements to act with the non-association manufacturers. The proposed new structures will cost. when equipped with machinery, something more than $100,000. making the value of the plant almost $500.000. The company is what is termed a close corporation, nineteen-twentieths ot the stock being heid by the original promoter and treasurer ot the company, Emil C. Hammer, a solid Boston business man. Of the younger companies the United States has perhaps the most flattering outlook.

—The annual meeting of the stockholders of the Trenton Watch Company, was held at the factory at Trenton, New Jersey, Tuesday, January 14th, the following being elected Directors for the ensuing year: John Moses, President Mechanics' National Bank, Trenton; Samuel K. Wilson, capitalist and woolen manufacturer, Trenton; Ex-Mayor F. A. Magowan, potter and manufacturer, Trenton; Lawrence Farwell, furniture manufacturer, Trenton; A. C. Smith, Non-Magnetic Watch Company, New York; W. S. Stryker, Adjutant-General of the State of New Jersey, and Ex Congressman J. Hart Brewer, President of the Ott & Brewer Co., manufacturers of "Belleek" china, Trenton. The secretary and treasurer's report showed the company to be in a flourishing condition, and the output much improved, both in quality and quantity. New and extensive additions to the plant were recommended, and a progressive policy adopted. The following officers were elected: J. Hart Brewer, President; F. A. Magowan, Vice-President; S. P. Camp, Secretary and Treasurer.

—The Chicago, Burlington and Quincy Railroad have placed an order with the Self-Winding Clock Co., 26 Broadway, New York, for 160 self-winding and self-setting clocks, which are to be utilized in a standard time system along its lines. These clocks will be connected with and set by the synchronizing clock at the general office at Chicago. The operation of transmitting the time is the same as that fully described in the article in another portion of this issue on the "United States government system of observatory time." The fact is the Self-Winding Clock Co. govern the patents relating to the Gardner system of standard time. The advantages of this system, as may be deducted from a perusal of the interesting article above referred to, is that no special wires are required, and, as the clocks wind themselves every hour, they require no attention beyond an occasional renewal of the electric batteries. The Self-Winding Clock Co. will shortly fit up in a sumptuous manner a new suite of offices at 26 Broadway, where the trade is invited cordially to visit and inspect specimens of their clocks.

—It will be remembered by the reader that the clocks used by the United States Naval Observatory at the Paris Exposition in its exhibit of Gardner's system of standard time, which is fully described in another portion of this issue, were all of Seth Thomas' make. One of the precision clocks which has a gravity escapement has been purchased by R. A. Jones & Co., of Spokane Falls, Wash., who will utilize it as a standard clock. In the manufacturing of these precision clocks every feature of design and workmanship is made subservient to the principal idea of obtaining as high an accuracy in their time measuring qualities as the existing knowledge of horology will allow. The name "precision clocks" was adopted in the sense in which that term has come to be understood in modern science as indicating a time-measuring instrument entirely above the line of every day accuracy and intended for those who desire to have a clock of extreme precision for purposes of scientific work, or for watch and chronometer rating, or as a standard time piece for local reference. The Seth Thomas Co. have a contract to furnish a large timepiece for the Union depot at Pueblo, Col. It will have four glass dials, 7½ feet in diameter. A lithograph has just been received representing the *Chronicle* building at San Francisco, Cal. In the picture is depicted the tower clock furnished by this company, and which has four of the largest dials in the United States, each being 16½ feet in diameter. The company are now busy in their watch department producing a new ladies watch in three grades, seven jeweled gilt, eleven jeweled nickel and fifteen jeweled nickel. It is expected that these goods will be ready for delivery some time before April 1. In October last the Superintendent of the Bureau of Equipment of the Navy Department at Washington ordered twenty adjusted watches from the company for a competitive test, during November and December, in heat, cold and position. There were in the test 138 watches of different makes. In the report submitted some days since, it was shown that one of the Seth Thomas watches, an ordinary 101 movement nickel case, taken from the stock, stood first. The Bureau bought four of the watches, a very fair proportion.

Annual Meeting of the Jobbers' Association.



H. F. HAHN.

THE annual meeting of The National Association of Jobbers in American Watches took place on Tuesday morning, January 21st, in the banquet hall of the Equitable Building, New York. When the usual preliminaries had been gone through with, the President, H. F. Hahn, arose and addressed the members as follows:

ADDRESS OF PRESIDENT HAHN.

Fellow Members of the National Association—Gentlemen: Again we are assembled—this time to review summarily and briefly the events of the fifth year since our organization was formed. I am happy to be able to say that the year which has just closed was generally a good one for all dealers in our line, and I trust particularly so for members of our association.

We are constantly reminded that the same objects and aims bind us firmly together which originally called our association into life, and that honesty of purpose towards the co-operating manufacturers, and the square dealing of members, each towards the other, are the highest requirements that can be made upon us. Time has demonstrated that success does not always attend that merchant who is ever ready and willing to divide his profit with his customer. The thinking dealer measures his man as he finds him, and extends to him that degree of confidence in his commercial integrity which his dealings justify.

No change has taken place within the past year in our dealings or relations with the co-operating manufacturers. They rightfully claim the whole patronage of association members, and insist upon full punishment being meted out to any one who disregards his plain and honest duty

The Anti-Pool and Trust laws passed recently in several of the Western States and in Texas have caused much solicitude among members residing in those States or doing business in them. They have, however, no just cause for alarm, for they are violating no law. We are conscientious in the belief that our organization is not in form or substance a trust. It is the *intent* by which each and every one of our acts must be judged, and if that be innocent, as we know it is, there is no basis for any liability. Our place in the commercial world as middlemen, in relation to the Trust laws, is one which we occupy without molestation, for the reason that we do not produce the goods we sell. We have no part in fixing the prices. We neither increase or restrict production. We do not pool any product, nor do we attempt to shut out competition. Our aim is simple—merely to obtain as many goods as we can, to sell at a uniform price and profit, with the least labor and expense for selling.

It is a debatable question, and one that has occupied thinking minds for a century, whether certain classes of goods are not placed in consumers' hands under a contract system at lower prices than if thrown into open market at prices governed by the laws of supply and demand. American watches are sold at this time for a lower price than at any period since their manufacture was begun, and we firmly maintain that neither the letter or the spirit of our organization aims at the creation of a monopoly or the centralizing of power.

In conclusion permit me to make the suggestion that there are a few rules which should be amended, and to recommend that you ask for the appointment of a committee to examine into the question and report what changes it may deem necessary. Thanks, gentlemen, for your courtesy and kindness. We will now proceed to the regular business that may come before us.

The election of officers resulted in the re-election of the present incumbents. They are: Herman F. Hahn, president; Ira Goddard, vice-president, and James H. Noyes, secretary and treasurer.

The following executive committee was elected: J. M. Cutter, E. J. Scofield alternate; E. C. Fitch, F. R. Appleton, alternate; C. N. Thorpe, H. L. Roberts alternate; H. F. Cook, C. W. Harmon alternate; David Keller, L. Stern alternate; Henry Ginnel, F. R. Simmons alternate; L. W. Flershem, E. S. Smith alternate; H. F. Hahn was made an ex-officio member, with Ira Goddard as alternate.

During the afternoon session a change in the by-laws was made, to the effect that small jobbers should not be restricted in their purchases.

MEETING OF THE CO-OPERATING MANUFACTURERS.

The American Watch and Case Manufacturers' Association held its annual meeting on the preceding afternoon at the rooms of the National Association of Jobbers. The withdrawal of the Illinois Watch Company was received. The reports from the treasurer and various committees were submitted and acted upon, after which the following officers were elected: C. N. Thorpe, of Philadelphia, Pa., president; H. F. Cook, of New York, vice-president, and Francis R. Appleton, of New York, treasurer. It was decided that the secretary elected by the jobbers should also fill the same position for this association, and in consequence James H. Noyes now holds that office. The name of the Blauer Watch Case Co. was changed to the Kenosha Watch Case Co.



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THE JEWELERS' CIRCULAR
AND
HOROLOGICAL REVIEW.

OFFICIAL REPRESENTATIVE OF THE JEWELERS' LEAGUE, THE NEW YORK JEWELERS' BOARD OF TRADE, AND THE JEWELERS' SECURITY ALLIANCE.

It is also the Recognized Exponent of Trade Interests.

A MONTHLY JOURNAL DEVOTED TO THE INTERESTS OF WATCHMAKERS JEWELERS, SILVERSMITHS, ELECTRO-PLATE MANUFACTURERS, AND THOSE ENGAGED IN THE KINDRED BRANCHES OF ART INDUSTRY.

SUBSCRIPTION.—To all parts of the United States and Canada, **$2.00 per Annum,** Postage Paid. To all Foreign Countries, **$3.00 per Annum,** Prepaid.

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☞ *Advertising rates made known on application.*

GOSSIP OF THE MONTH.

☞ A full Index to Advertisements and a Table of Contents will be found on Page 5 of this issue.

Subscribers will do a favor by notifying us at once upon the non-receipt of any number of THE CIRCULAR. The mails will occasionally miscarry, but we will cheerfully make good Uncle Sam's little shortcomings by sending another copy to replace any missing one.

WE TAKE this opportunity to acknowledge our obligation for the many flattering enconiums which the last number of THE CIRCULAR has called forth from all sides. These marks of approval afford convincing proof that our efforts to produce a book which shall meet the wants of the more thoughtful and intelligent portion of the trade have not gone unrewarded. To provide for our readers articles of solid worth written by experts in the line of which they treat, careful selection and a considerable outlay are required, but we feel amply repaid for all our trouble and expense when we open our mail and read "what they say."

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ADVERTISERS and readers who wish to see "what they say" about us are referred to page 36, where we print a few of the many testimonials received during the past month. These are not merely renewals of subscriptions but complimentary opinions from subscribers and others, who, as regular readers of the paper, feel called upon to express their appreciation of its many valuable features. We thank our friends, one and all, for these kind expressions of good will and promise that it shall be our aim, in the future, to make THE CIRCULAR still more worthy of their golden opinions.

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Read "What They Say" about us.—Page 36.

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NEW INTEREST is being shown in the question of industrial education in England The Paris exposition is said to be responsible for it and one of its immediate effects has been the establishment of more jewelers' trade schools and the taking of steps to make it compulsory with apprentices to attend them for a certain number of years before they can become journeymen. The United States had an opportunity to learn the same lesson, but has apparently allowed the occasion to slip. We seem quite content to keep on borrowing our designs as we have been borrowing our music and our art from foreign sources. Foreigners have been ready enough to relieve us of the drudgery of thinking. They have not only opened our mines, built our roads and tilled our fields; they have even fashioned our jewelry and our silverware, our pottery and our tapestry, and we have been content to let them do it for us, not dreaming that a day of retribution was coming. For to day when our manufacturers are only able to give the people the stone of foreign affectations, they are asking for bread, and are determined to have it. Our people have become more homogeneous, more pronounced and matured in their ideas, more truly American in all their tastes. Foreign imitations no longer please as they did in the earlier period of our history. It is impossible longer to run our new ideas into the old worn out moulds of Europe. We must employ designers who are thoroughly American in education and sentiment. How shall we get them? The question is easily answered. Enough talent is diverted into the unprofitable "genteel" occupations of clerking, book-keeping, speculating, etc., or allowed to waste itself in useless idleness, to supply our art industries with designers twice over, if adequate facilities for their training are provided. In our vast continent and the teeming life of our democracy, there is no lack of inspiration for the eye that is quick to conceive and the hand that is ready to execute. Unfortunately until the present time the means at hand for the instruction of students in the art of design as applied to the mechanical trades have been most inadequate. This lack, however, will happily not long be felt. Owing to the earnest endeavors of Mr. John Ward Stimson on behalf of the artist artisan, a grand rally of the friends of technical education has been made around the New York Institute for artist artisans, which from the breadth of its scope and the earnestness of its purpose, seems to give the greatest promise of future usefulness. With the co-operation of the various trades this school

may be made a continual source of supply of the best talent, trained with special reference to the particular trades they are to design for. The movement is already started and it is high time the manufacturing jewelers put their shoulders to the wheel. American designs for Americans should be their motto, and must be if they are to meet the demands of the public to-day. Those who fail to see this now will discover their error too late.

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The "Essence of Horological Schools" is discussed in this number by C. Dictzschold, Impero-Royal Director of the Horological School at Carlstein, Lower Austria.

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OUR friends in Chicago are doubtless rejoicing over what they are pleased to consider their good fortune in securing the prize of the World's Fair for 1892. It would be well to remind them, however, that the task of organizing an international fair in Chicago will be the biggest one the city of big ambitions ever undertook. Her energy and her public spirit are great, and they will be backed by liberal contributions from her treasury and from the purses of her wealthy men, but in respect to location, prestige and accommodations she is clearly handicapped from the start. The eyes of her disappointed rivals are upon her, and she will not want for critics. In spite of the decision of congress we must persist in thinking New York a far better location for a World's Fair than the one chosen, though for a national fair no better site than Chicago could be wished. But Chicago has it, and, however deficient in its international aspects the coming exhibition may be, it will certainly be a credit to the great metropolis of the lakes. It is to be regretted that politics was allowed to interfere in deciding the location. But what question of public moment is there in which the fine Italian hand of the bosses does not appear?

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Richard Lange, the celebrated German horologist, describes an up and down mechanism of his invention on page 32.

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IT IS said that Mr. Bradlaugh, M. P., who has been traveling in India, has been completely won over to the abolition of the duty on Indian silver work. He brought home, some thirty-five silver caskets, which were presented to him from various sources during his recent sojourn in India, and owing to the silver duty they will cost him what is to him a little fortune before he can call them his own. Another subscription might be engineered to meet the difficulty.

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"Watch and Clock Escapements," by Dudley W. Bradley, continued in this number.

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OUR London correspondent informs us that the recent tightening of the diamond market and the consequent scarcity of rough has stirred a migratory impulse in the breasts of the Amsterdam diamond-cutters, and they are looking toward London as the future home of their craft. This is not surprising. The advantages of London as a center for the diamond cutting industry have long been recognized. Only last year an organized movement to establish the industry there was begun by a number of English capitalists. London is the great market for rough, which it would seem can be cut to the best advantage right there on the ground, provided of course that the art of cutting is cultivated to the necessary degree of perfection. But there is no reason why England should not take the diamond cutting trade from the continent, as she took so many other skilled trades in the time of the Huguenot persecution and earlier. We are well aware that the transplanting of an art, at once so skilled and so firmly established as that of diamond cutting in Amsterdam is a formidable undertaking. Amsterdam is the home of the craft. Her supremacy as a diamond mart dates back to the old days of Dutch commerce, when the ships from the Zuyder Zee penetrated to the remotest quarters of the globe in quest of trade. Cutters and polishers of great skill settled there centuries ago, and handed the trade down from father to son, through many generations. For a long time Amsterdam enjoyed a monoply of this profitable trade. But of late years, small colonies of cutters have migrated and attempted to foster the trade in other favorable locations. These attempts have been more or less successful and to-day Antwerp, Paris, the Jura and London are competing with the old Dutch capital. The trade is no longer a jealously guarded secret, and it has gradually become apparent that her prestige is on the wane. The present condition of the diamond market has worked still more disadvantageously, particularly for the smaller cutters, and they are contemplating what must seem to them a desperate remedy for the prevailing dullness. Unless we are greatly mistaken, however, if they have the courage to adopt it, it will prove a blessing in disguise, and the cutting industry will flourish anew in the alien soil.

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Don't lose sight of Elsie Bee's notes on "Bric-a-Brac, Ceramics. and Decorated Novelties" Every jeweler ought to handle some of these goods.

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A REMARKABLE feat of watch case making was shown at the Paris Exhibition by Clémence Frères. A gold hunting watch, of not unusual thickness, was constructed with four covers on each side, jointed to each other, and revealing, when opened, a portrait back and front, so that altogether fourteen pictures were exhibited—quite a family portrait album, in fact. In ordinary use the existence of the duplicate covers would not be suspected, for both the hunting and back covers were arranged to fly up by pressure on the winding button, and their extra substance was not readily apparent.

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If you have a case in Optics that puzzles you, write it out for Dr. Bucklin's department of THE CIRCULAR, *send it in and you will get an answer.*

*** *** ***

AGENTS of the Deccan Diamond Co., are said to be now engaged in prospecting in the old-abandoned diamond fields at the head of the river Kistna, in India, where the Pitt and Regent diamonds were found, and where tradition locates the famous diamond valley of Sindbad. In the light of the recent news of the acquisition of the Brazilian fields, by the De Beers company, the movements of these Indian prospectors need not excite alarm. As a prominent dealer in Maiden Lane, remarked—"That don't amount to anything. If they should find anything, the De Beers would buy it up in five minutes." The stability of the diamond market for some time to come seems positively assured.

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Chas. S. Crossman's History of Clockmaking in America begins in this issue.

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THE latest news from the diamond fields tends to strengthen still further the confidence of the trade in the ability of the De Beers company to maintain its hold upon the diamond market. The acquisition of the Brazilian fields seems to remove all doubt of the syndicate's permanency. The Indian mines and the newly developed properties in the region of Kimberley scarcely enter into the problem at all, as the results of prospecting in those locali-

ties have not been at all flattering. The price of rough has advanced 100 per cent. since the De Beers began operations, and it is declared to be the intention of the diamond kings to force it still higher.

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THERE seems to be a disposition on the part of the retail trade to minimize the recent advance in the price of diamonds and defer purchasing in the hope of more moderate prices. This attitude is not justified by the facts. That cut diamonds have already advanced 30 per cent., and that the price of rough at the mines is ruling at least 100 per cent. higher than it was a year ago, are facts so patent to every jeweler that he who runs may read. To add greater significance to these figures and convince the most skeptical, it is only necessary to refer to the latest advices from Kimberley announcing the purchase outright by the DeBeers Company of all the remaining properties in the four mines, and the acquisition of the control of the Brazilian fields, present and prospective. The DeBeers Consolidated Mines thus holds in its grasp the diamond markets of the world and will be able to regulate prices with perfect ease. These being the indisputable facts in the case, it would be wiser for the retailer to purchase according to his needs, at the present inconsiderable advance, than to be deluded into waiting for lower prices and finally be compelled to buy at much higher figures. Of the genuineness of the rise and its permanency no one conversant with the facts can entertain a moment's doubt. But as compared with the prices of fifteen or twenty years ago the present prices are still ridiculously low, It is only since the phenomenal development of the Kimberley mines, made possible by the introduction of improved machinery and the engineering triumphs of the De Beers company that diamonds have been produced at the low figures of the past five years. But the keenness of the competition among the companies has caused fluctuations in the market which were detrimental to the interests of all dealers in diamonds. Security will again be felt now that so powerful a company is in control.

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THE STARTING up of the Lancashire watch factory at Prescot, England, marks a distinct epoch in the horological industry of that country. After a long period of distress and vain striving against fate the American factory system has been adopted there, and a company launched with very favorable auspices. In this year 1890, many of the mistakes of the early American pioneers can be avoided, and much of the ingenuity of our inventors and experimenters can be utilized. Hence the Lancashire factory will probably be spared the struggles that beset the paths of all our early watch factory enterprises There is another advantage which the promoters of this English enterprise have—the present liberal trade policy of England, which has made her the commercial leader of the world. The market for her products is the world. Ours is almost confined to our own boundaries. A judicious modification of our tariff schedule would enormously increase our exports of watches. In the processes of manufacture we possess many advantages over these late comers in the field, but why should we allow them the equally great advantage of a freer market ?

The Jewelers' and Tradesmen's Company.

At the recent weekly sessions of the Executive Committee, the following named candidates have been admitted to membership: James I. Sarles, John R. Daniels, Stamford, Conn.; Halvor Svensden, Charleston, S. C.; Morris Steinert, Fair Haven, Vt.; Theodore S. Hall, Huntington, L. I., N. Y.; Emory Hall, Dallas, Tex.; Charles S. Crane, Strobel & Crane, Newark, N. J.; Harvey L. Grover, M.D., Brooklyn, N. Y.; Henry E. Gillespie, Au Sable Forks, N. Y.; Lazarus Loeb, Newark, N. J. And the following of New York City: James C. Blauvelt, James M. Shaw & Co.; Charles Y. Campbell, W. & J. Sloane; Theodore M. Courtright, E. S. Johnson & Co.; Henry C. Potts, E. S. Johnson & Co.; Joseph M. Vose, E. S. Johnson & Co.; John R. P. Woodriff, E. S. Jaffray & Co.; Joseph Schmidt, S. Cottle Co.; A. C. Smith, late of Non-Magnetic Watch Co.; Emanuel Pelikan, Nathan Kann, Frank Keller and Charles Frey, Keller & Frey; Alexander Davidoff, Alexander Weiderhold, Milton Adler, J. Herzog; Morton B. Doughty, James S. Beatty, Walter Doughty, Robert H. Gillespie, Aikin, Lambert & Co.; Joseph Herzog, Charles E. Jenkins, Leroy W. Fairchild Co.; Julius F. Simons, S. Cottle Company; Charles Van de Sande, C. Van de Sande & Co.

We are assured by the officers that this society will not attempt to force the condition of its mortuary or other funds by assessments otherwise than as required to pay mortuary calls as they may occur; in other words, it will not force periodical assessments. This has been carefully considered, intelligently discussed and definitely determined.

This statement is modified by the warning to each of its members that when the mortuary calls become more frequent, as they necessarily must, their regular recurrence will then have the semblance of periodicity, and thus only will they become periodical. Even then the periodicity will vary in accord with the varying frequency of mortuary assessments.

In the course of ten years an insurance of $5,000 will cost an average of $70 to $80 per annum, with no probability of exceeding that average. This statement is made in order that the members may anticipate that cost, and thus the better appreciate the infrequency of assessments prior to that time.

The Jewelers' Security Alliance.

The regular monthly meeting of the Executive Committee was held at the Alliance office on Friday, Feb. 14. There were present Vice-Presidents A. K. Sloan, Henry Hayes and David Untermeyer, J. B. Bowden, Chairman, Chas. G. Lewis, Treasurer, Messrs. White, Kroeber, Butts and Secretary Hodenpyl.

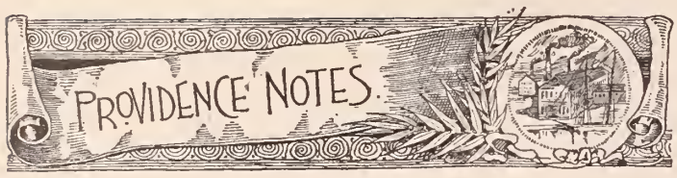
The following were admitted to membership: J. M. Blake, Est., 302 Central avenue, Hot Springs, Ark.; C. S. Hook & Co., 285 Main street, Memphis, Tenn.; Hyman, Berg & Co., 127 State street, Chicago, Ills.; The Bassett Jewelry Co., 69 and 71 Bruen street, Newark, N. J.; G. T. Sadtler & Sons 16 E Balti. street, Baltimore, Md.; J. N. Webster, Springfield, Mo.

The Jewelers' League.

At the first meeting of the Executive Committee of the Jewelers' League for 1890, there were present Messrs. Bowden, Greason, Howe, Jeannot, Jenks, Houghton, Untermeyer and Sexton.

There were five requests for change of beneficiary granted, three applications for membership were referred for investigation, and the following persons were admitted to membership:

Henry Alkan, New York City, recommended by Wm. Bourke; John E. Beck, Cincinnati, O., recommended by Clemens Hellebush; Henry E. Gillespie, Ausable Falls, N. Y., recommended by J. P. White and W. H. Candee; Adolph Keller, New York City, recommended by F. J. Boesse and A. A. Jeannot; John Mason, New York City, recommended by Paulding Farnham; C. G. Megrue, Jr., New York City, recommended by John W. Senior; F. A. Persohn, Baltimore, Md., recommended by Morris Lissauer and Aug. Steman; Arthur F, Pfeiffer, New York City, recommended by W. H. Jenks; Wm. H. Shipman, Newark, N. J., recommended by Frank Bigley; Robert W. Simpson, Catskill, N. Y., recommended by A. J. Parker and J. W. Senior; Albert H. Tyroler, New York City, recommended by S. B. Mann; David L. Wertheimer, New York City, recommended by Wm. Bourke and J. J. Fogerty.



[From Our Special Correspondent.]

Providence, R. I., Feb. 20, 1890.

The past month has been one of unusual festivities in the jewelry trade. Dinners and reunions have succeeded one another with most enjoyable frequency, and as all of the jewelers are blessed with good digestion, they are in a very happy frame of mind.

One of the events of the season was the reception of the New England Jewelers' Association, at Tillinghast's, on the evening of February 3d. After a grand march to the dulcet strains of Baker Bros. Orchestra, and a social hour varied by dancing, the company sat down to a turkey supper. Dancing was then resumed until midnight when the party dispersed. The directors of the affair were Frank T. Pearce, A. A. Bushee, W. S. Hough, Jr., and G. Herbert French. Among those present were F. T. Pearce, S. O. Bigney, W. H. Riley, H. H. Curtis, W. M. Fisher, R. Blackinton, Fred. Heffron, Albert Krower, Stephen Albro, H. A. Kirby, D. E. Mowry, E. H. Dunham, W. H. Harvey, B. A. Ballou, H. G. Thresher, T. F. Arnold, H. G. Smith, O. C. Devereux, J. M. Buffinton, Fred. I. Marcy, H. F. Carpenter, W. O. Clark, N. B. Nickerson, E. Martin, W. S. Hough, Jr., Edwin Lowe, S. H. Manchester, A. A. Bushee, H. M. Daggett, G. C. Cummings, J. E. Codding, Wm. Leeder, W. B. Frost, M. L. Read, S. J. Emerson, Chas. H. Downs and E. L. Hixon,—nearly all accompanied by their wives.

The Grand Lodge of Plumed Knights, a Republican organization composed chiefly of jewelers, held a banquet at the Narragansett Hotel, on the 13th inst. covers being laid for 100 persons. Among those present noticed by your representative were Col. I. N. Goff, G. W. Hutchison, T. W. Foster, M. Fitzgerald, C. Sydney Smith, N. B. Barton, A. S. Remington, Stephen Albro, Harvey Huestis, Fred. I. Marcy, J. M. Buffinton, E. S. Horton, N. S. Davis, H. S. Dorchester, S. H, Manchester, Horace Remington, W. N. Otis, Stillman White, Walter Gladding, E. L. Logee, A. A. Bushee, A. E. Austin, Geo. H. Holmes.

Fred. I Marcy is president of an organization known as the "Sons of Vermont," which held its third annual reunion and dinner at Tillinghast's parlors last week.

The Hon. Hiram Howard made quite a stir in the legislature recently by making a strong speech on the subject of bribery and corruption in Rhode Island politics. Mr. Howard is winning fame as an orator which will probably make a place for him soon in the halls of Congress. Senator Howard would sound well.

The five representatives of the Sterling Company, Providence, R. I., are now visiting their customers, and though very few additions have been made to the line, orders average fifty per cent. greater than at the same period of last year. The corps of artist-artisans at the works are busy devising with both skill and taste, a number of novel and beautiful articles soon to be offered for the approval of the trade.

Fairfax.

The Battle of the Burglar-Alarm Companies.

THE pitched battle between the Holmes Electric Protective Company and its sturdy young rival, The Metropolitan Burglar Alarm Company, is arousing a great deal of interest in the trade. One of the latest movements of the Holmes Company was to offer the subscribers of the Metropolitan Company protection at $5 per month, $10 per month being the former charge made by the Holmes Company. Immediately upon receiving information of this action on the part of its rival, The Metropolitan Company called a meeting of its directors to consider the matter. It was resolved before taking further action, to learn the sentiment of the trade, and a circular was drawn up by which the signers should bind themselves to use the service of the Metropolitan Company for three years at the present rate—$10 per month. The sentiment of the trade is shown quite conclusively by the fact that with one exception all the subscribers of the company, numbering over one hundred, willingly affixed their signatures to the paper.

The entrance of the Metropolitan Company into the field has lowered the rates of protection to the jewelry trade and subscribers realize that it is to their interest to foster the new company and thus secure the benefits of competition, rather than throw the business back again into the exclusive control of the old company. Competition is the life of trade.

The Metropolitan will now make a canvas among the banks, where they have every prospect of success, and at the request of many up-town jewelry houses, they will soon open an office in the neighborhood of Union Square.



[From our Special Correspondent.]

Philadelphia, February 20, 1889.

The regular monthly meeting of the Pennsylvania Retail Jewelers' Association was held on the 12th inst, President A. S. Goodman occupying the chair. The attendance was very large and much enthusiasm was manifested. Some of the committees appointed at the previous meeting reported. The committee on tests, the committee on charter and the committee on a journal to be established by the association all submitted reports. It was decided to apply for a national charter at once, and also to establish a monthly journal in the interest of the organization.

M. Zineman & Bro., the opticians, of South 9th street, announce that the experiments they have been conducting in connection with General Lillie, of Mauch Chunk, Pa., the well-known chemist, to produce aluminum adapted for use in spectacles and eye-glasses, have been crowned with success, and they are now introducing it into their goods with great success. Sales are already ahead of last year, showing that the "Diamanta" brand of optical goods is increasing in popularity.

C. J. Cooke, of B. J. Cooke's Sons, the clock house, is sojourning at Atlantic City to regain his strength after a four weeks' tussle with "la grippe." This house has fully replenished its stock after the holiday rush, and now shows a fine selection of the most desirable goods of all the leading manufacturers.

The National Optical Co., 11th and Mifflin streets, report an unprecedented increase in their business during the past month. Their new patent flexible eye-glass, with both ends of the nose piece free, has met with much favor from the trade.

David F. Conover & Co. stated to your reporter that trade was a little quiet, as it is to be expected at this season of the year. They are receiving many applications for their new tool, material, optical and spectacle catalogue. Retailers who have not already done so should send in their cards to the house, when copies will be mailed to them.

George F. Kunz, the well-known gem expert with Tiffany & Co., delivered a lecture on American precious stones before the Franklin Institute, on February 17. Mr. Kunz treated the subject in his usual thorough and entertaining style.

The National Watch Case Co., 715 Arch street, find prospects for the season most encouraging. Their sales of Dueber goods have

exceeded their highest expectations. Already they have booked large orders for the new "John C. Dueber" Hampden movement, and feel confident that their demands upon the factory for this movement will be very heavy this year. "Dueber has hit it again," seems to be the universal opinion of all here who have inspected this latest product of the Hampden factory.



Proceedings of the Watchmakers' and Jewelers' Union.

[NOTICE.—We shall be pleased to receive and discuss descriptions of new tools, attachments and improvements in any branch of our trade, and publish them free of charge; also inquiries for those desiring information on any point of general interest. Communications should be written as concisely as possible consistently with clearness, on only one side of the paper, and be received here by the 10th day of the month, in order to be discussed at our meeting for that month and inserted in the next issue of THE CIRCULAR. Address them to "Secretary of the W. & J. U., care of THE JEWELERS' CIRCULAR, 189 Broadway, New York." For full information for correspondents, see our Proceedings in THE CIRCULAR for October, 1889.]

Fifth Meeting.—Reported by the Secretary.

At the fifth meeting of the Union, a fairly good number of members were in attendance, though some were still indisposed through the remnants of that all-pervading malady "the grip." The secretary having fully recovered was present, and though the meeting was shorter than usual, it did not lack spirit and interest. The secretary presented for the consideration of the members a communication which he had received on a subject that he thought would interest them all. It was as follows.:

TO SNAP OR NOT TO SNAP—A WATCH CASE.

CLEVELAND, O,, Feb. 10, 1890.

Secretary of the W. & J. U.:

Herewith you will find a clipping from a New York mechanical paper. And as the subject discussed seems to fall naturally into the hopper of your horological mill, I should like to have it ground out and see what the result will be—to snap, or not to snap, that's the question. Surely there is no more authoritative body to decide it than yourselves. After discussion, please put it to vote. Yours truly, R. C.

The secretary read from the clipping the following:

"HOW TO SHUT YOUR WATCH.

The earnest seeker after truth is constantly meeting with discouragements. Especially profound is the depression of his spirits when, after religiously obeying some rule of conduct which was laid down for him early in life and has been followed through the vicissitudes and temptations of many years, he finds. when his hair is sprinkled with gray, that he has been all the time doing the wrong thing. There are a good many examples of this perversity of fate, but the latest we have heard of relates to the way in which you should shut your watch. Somebody said to us many years ago, "Don't shut your watch with a snap. Push the spring in with your thumb, and let the snap come down easy. It will last three times as long, etc., etc." And we have accepted the dictum afid have lived up to it to the best of our ability. And now comes the New York *News*, and deposes and says as follows. We quote:

"One of the group pulled out a handsome gold watch, evidently new, looked at its face and closed the case noiselessly.

'Never do that,' said the man next to him. 'You make the same error that most people do with watches. That is a new watch you have there and you are careful of it. Let me have it a moment and I will show you something.'

The watch was handed to him.

'In closing a hunting-case watch,' continued the second speaker, opening the one in his hand, 'never push the spring back so that the case will shut without a click. Shut it right down on the spring like that'—he closed the case with a sharp click—'and your case will not wear out in half the time that it will if you try to save it by pushing the little steel spring out of the way of its gold notch.'

'How do you know all this?' asked the owner of the watch.

'I've been a watch salesman for many moons and know whereof I speak,' was the reply."

Mr. UHRMACHER said it was quite natural and professional that a salesman of watches should pronounce in favor of shutting down the cover of a hunting-case watch with a snap or a click, as it is a well-known fact that both people of the trade and out of it, when a buying a watch, delight in hearing the cover come down on the spring with a sharp click. And sometimes the retail customer will not buy the watch, if such is the case. He thought, however, that it was contrary to reason, that the increased friction caused by such shutting down would preserve the case from wear more than the withdrawal of the spring in shutting down the case and letting the spring slip into its place by holding down the cover of the case tightly, when such slipping of the spring is positively done without friction. Mr. EXPERT contended that it might be different, when the case was not pressed down tightly, as then there might be a serious wear by means of the cutting edge of the under part of the spring, particularly if the inside beveled edge of the case was cut at a right angle, which should be about three degrees. The chairman then called for Mr. JOBBBERSON'S views. He said he had had to do with the care of watches for about fifty years, and the result of his experience was to be decidedly in favor of pressing the spring in closing exactly as is done in opening the watch-case, always holding the cover of the case down tightly to avoid friction. As a matter, of course, he said a case spring ought to be properly made.

The verdict of the meeting being so unanimously against the watch salesman, it was not deemed necessary to put it to a vote.

The discussion of this topic having been carried far enough the Secretary produced another letter which he laid before the meeting.

Binghamton, F. Y., Feb. 5, 1870.

Secretary of the W. & J. U.:

I have in my possession a fine Swiss watch, given to me for repairs and for redamasceening, as the original damasceening has been worn off by brushing, etc. Can you report any instruction how this may be done without any special tool made for the purpose? And can you give me any other information on the subject, which may come handy? By so doing you will oblige YOURS, &c., &c.

Mr. ELECTRODE apparently charged with information on the subject rose at once to his feet.

Any one who had never done any work of this description, he thought would find the damasceening of a Swiss watch movement a rather difficult task, but zeal and intelligence might accomplish it, and this would generally be the modus operandi.

A perfectly flat water-stone of good size will restore the flat surface of the pieces and remove scratches. A double slide moving at a right angle like the slides forming an ordinary slide rest, is the most necessary tool. One of these slides ought to be fitted with a cam for rapid motion, the other slide may be worked with the usual screw. A spindle, like that used for an upright drill or a grinding fixture, such as is made for the American lathe, is set perpendicularly over the upper slide. This spindle is fitted at its end with a small ivory cup turned to a sharp edge. The parts to be damasceened are fastened to the top slide which is moved by the cam under the rapidly revolving spindle, which is set a little out of the perpendicular, inclined towards one side in order to allow the edge or only a part of the circle of the polisher to touch the work.

Mr. EXAMINER added that in an arrangement of the sort described by Mr. ELECTRODE straight line damasceening only could be done, fancy figuring requiring a more elaborate arrangement, and that back and forward motions varied the appearance of the alternating lines. The grinding substance used should be finely pulverized oil-stone mixed to a paste-like consistency with oil. By means of the finger or some other suitable appliance the surfaces of the parts to be damasceened are charged with this paste and brought under the action of the ivory tool which is revolving at a fair speed,

care being taken to avoid striking in hollows or recesses, as this would break or damage the ivory tool. He recommended a slow beginning as some practice is necessary to make a success of the job.

Mr. Isochronal informed his fellow members that the Swiss use an engine-turning tool for the purpose of damasceening, by means of which they produce very pretty designs, but that in our American watch factories tools of an entirely novel construction are used for the purpose.

The next inquiry was of a different character, and gave the horologists an opportunity to rest after this unusual waste of grey matter. The secretary read the following letter:

Boston, Mass., Feb. 5, 1890.

Secretary of the W. & J. U.:

Why does plated jewelry, even when plated with fine gold, tarnish more readily, which it certainly does, than jewelry made of solid gold? A. B.

Mr. Electrode, being something of a chemist as well as an electrical crank, was called upon to open the discussion. He said that plated jewelry, except it be plated unusually heavy, will tarnish, probably for the same reason, that gold of a low carat will tarnish, no matter how often it is cleaned. It had been explained by some that there is in all metallic alloys or combinations a continuous galvanic action going on, such action being induced by atmospheric air or impurities contained therein. In this way the impurities, or the base metal contained in gold of a low carat will be continually thrown on the surface, as the galvanic action will affect the metal gradually to an increasing depth. It may be inferred that the same is the case with plated jewelry, unless the fine gold be pretty thick. That some such theory may be founded on fact he thought was corroborated by the popular belief that old silver spoons or tableware are finer silver than those recently made.

Mr. Empiricus said he believed the tarnishing of jewelry and silverware in a jewelry store was largely due to the use of illuminating gas, which contains sulphuretted hydrogen, and in burning yields sulphurous acid. With the more general introduction of electric light, he thought the complaints in regard to the tarnishing of jewelry would be very much lessened, though the presence of sulphuretted hydrogen can never be entirely removed in dwellings and apartments occupied by living beings.

There being no further business before the meeting, it was voted to adjourn.

Up-and-Down Mechanism for Watches.

By Richard Lange, of Glashütte, Saxony.

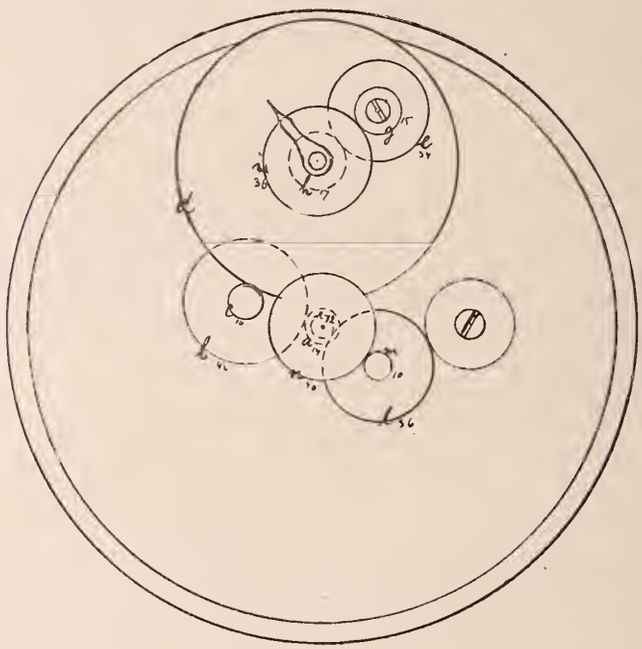
(written for the circular.)

I TAKE pleasure in laying before the readers of The Circular an invention recently perfected by me. In view of its eminent usefulness, viz.: of reminding watch wearers, especially those of the forgetful kind, that the watch either requires winding or has been wound recently, it will call for careful perusal and consideration. The mechanism, which is patented in all countries, doubtlessly belongs to the most interesting in the domain of horology; its operation is absolutely certain and continuous, while the proper mechanism does not in the least consume any of the spring tension of the watch, because the motion of the up-and-down indicator is effected entirely by means of depthings.

Fig. 1 is an upper view of the up-and-down work, with dial removed; it is only necessary to place the latter a trifle higher than ordinarily, as the mechanism does not occupy much space, and, therefore, the case need not be thicker than for watches without such an auxiliary. Fig. 2 represents the small circle upon the dial with the figures for the up-and-down work. About five-sixth parts of such a circle are necessary for a watch running 30 hours. This circle stands opposite to that of the seconds.

The entire up-and-down work consists simply of wheels and pinions. Of the latter, two are stationary (one upon the prolongation of the core, the other upon the center pinion), all the other parts move freely upon pins. The motion of the tension indicator *v* is effected during the running down of the train in the following manner: The steel pinion *a* with 14 leaves is mounted firmly upon a shoulder of the center pivot, and depths into the transposing wheel *b*, with 42 teeth, the 10-leaf pinion *c* of which depths into the large wheel *d*, with 95 teeth, sitting loosely upon a shoulder of the prolonged barrel core. Upon the plane of the large wheel *d*, retained by a stop screw, moves the small wheel *e*, with 34 teeth, with 15-leaf pinion *g*. But since, now, the 17-leaf pinion *h* is mounted firmly upon the core, the small wheel *e* must in the rotation of the large wheel *d* equally revolve around its axis, and the pinion *g* actuates thereby the small wheel *i*, with 32 teeth, upon which is mounted the tension indicated. This indicator, therefore, moves while the watch





is running down, from *o* (up) to 30 (down), and shows at any moment the time the watch has still to run.

This special arrangement of wheels is called a differential train, which is also used for the representation of the motions of the planets. When winding the watch only a few parts of its train are set in motion, because the large wheel *d* remains stationary. It is moved but slowly by the steel pinion *a* upon the center pivot; pinion *h* depths into the wheel *e*, and thus its pinion conducts the wheel *i* with the tension indicator; when the stop tooth, together with the barrel core and the pinion *h* fastened upon it, have revolved almost four times, the small wheel with the tension indicator has revolved only five-sixths of a circle, in tenor with the demands of the construction, in consequence of the transposition. So as to render our description plainer, the motion work also has been shown in the illustration; *k* is the 12-leaf canon pinion upon the center staff *l*, the minute wheel, 36 teeth, *m* the minute pinion, 10 leaves, and *n* the hour wheel, 40 teeth.

The most important circumstance of this construction is that the entire mechanism operates by natural motions, while the watch itself has no additional frictions to surmount; in the same manner the entire arrangements may be taken down with the same facility.

The Essence of Horological Schools.

By C. Dietzschold, *Impero-Royal Director of the Horological School at Carlstein, Lower Austria.*

(written for the circular.)

FROM THE great system of schools established for thousands of years in all the civilized countries on the globe, has in modern times emanated the trade school, and from this again, the technical school.

It is an indisputable fact that the matter of the partial diversion of trades education has become a poignant question in view of the ever-increasing introduction of machinal auxiliaries. Circumspect tradesmen soon recognized this, especially watchmakers, and founded special schools. The Empire of Austria was the first country which organized a large number of trade schools, apprentice schools and experimental stations—a merit which should cause it to take its rank among the most civilized countries. The other European countries simply permitted horological schools to be opened by the trade, and then subsidized them, for instance, as France does, in the most liberal manner. Thus, the Société des Arts et de l'Industrie instituted the first horological school as early as 1832. Later on the different states generally then took hold of the schools, or, at any rate, the surveillance over them.

These schools were at first only drawing schools in which instruction was imparted for a few hours only on Sundays. Next, the evening hours were devoted to this purpose, which instruction, for want of proper instructors, doubtless educated the young minds, but technically it was of but little benefit.

The problems which offer themselves under so many phases to the watchmaker, but which he must unconditionally understand if he desires to press on in the van of progress, have for a long number of years been treated of and expounded by eminent scientists, such as Huyghens, Euler, Gauss, etc. Unhappily, however, the watchmakers lacked the requisite mathematical knowledge for the comprehension of the work; and again, the scientific instruction was partly at variance with the facts taught by practical experience, or, at least, appeared so.

This demanded correction. Scientifically educated men, who stood in most intimate relations with horology, seized hold of and treated the question from a practical standpoint, and thereby brought the problems much nearer to the comprehensions of the practical workman.

The education obtained in the public schools had to enable the practical men to understand the mechanical and geometrical functions of the mechanisms employed in and for the calculations and sketching of the watch, as well as to judge of the merits of the auxiliary machinery and their proper use.

The time finally arrived when this abstruse instruction could no longer be imparted in the evening class, when the tired mind was unable to grapple with the problems. Hence, instruction in daytime became necessary, and when practical lessons were united with these schools, conducted by expert technical men, the horological school of to-day was perfected. Both the practical and theoretical education, finally, is complemented by the instruction in bookkeeping, and the drawing up of documents used in busine s life and intercourse with tradesmen.

Another important factor in this technical education also is the study of models, partly on a large scale, and horoiogical collections in the class room The latter should be studied for the sake of telling the student how gradually the toothing, the escapement, the striking work, etc., attained to their present perfections.

The cases, which exact diverse changes in the arrangement of the parts of the watch, should be represented both by originals and imitations.

Especial attention is also to be directed to the manner of placement of the different parts of and in the watch in the various countries, the most popular styles presiding there, its cases, etc.

Although the length of time devoted to acquiring a trade appears to be greater than that for obtaining an ordinary education, the time to be spent at school has not been made longer, because experience has taught that the one is a complement of the other.

This is about a picture of the interior disposition of the technical school, without at the same time exhausting the subject.

The mutual relation occupied by practical life, which largely depends upon science, and this, again, upon the impulse received from the former, should also exist between the technical and the public school—one the complement of the other.

And, indeed, in consequence of the co-operation of capable technical minds, collections, relations existing between the technical men of one country with those of another, the technical school has become a powerful factor, and although it has not yet attained to its due proportions, it may safely be asserted that it will do so in the near future.

The aim of the teachers of a technical school and the confidence of the technical men in the capability of the school, will operate conjointly and cause it to assert its full rights to distinction, and to be no longer regarded as a problem. At best, it can only be considered a question of time, to be solved in the natural course of events.

Drills.

BY PAUL N. HASLUCK.

Author of "The Watch Jobbers' Handybook," "The Clock Jobbers' Handybook," etc.

(written for the circular.)

SOME few words on drills, and how they should be made so as to produce the best results, will be read with interest by many who have experienced difficulty in using these common tools. The steel used should always be the very best obtainable for the purpose. The small quantity required for making a drill makes any question of relative cost per pound practically of no moment. "Silver steel," by which is understood the rods of bright steel wire sold in foot lengths, commonly serves as stock for making drills. It is, however not the best. A good *hand-hammered* steel of *square section* is probably not to be surpassed. The hammering improves the metal to an almost incredible extent, and the hammer can only be satisfactorily used on square steel.

Good steel is quite easily spoiled by incautious treatment in heating. Annealing the raw material first brings it under the influence of heat. A dull red, that is to say a color that does not show itself in bright daylight should never be exceeded The cooling must be very carefully watched, so that it is equal and gradual. If this is not attended to the steel may show faults subsequently. Properly annealed at a low red heat, the steel may be worked with a file quite easily. Overheated steel is always difficult to work, and when made up into tools it is a failure.

Large drills require forging under heat, but our trades seldom call for drills so large that they cannot be shaped under the hammer cold. A light hammer and a large number of gentle taps will spoil the steel at this stage. One or more cracks will be started by this treatment. The correct method of flattening a drill is to use a comparative heavy hammer, and to strike *one* smart blow. This is effective in spreading the steel and does not crack it.

The correct shape for a drill is strongly disputed, but if we take the results of experiments, made with large drills and carefully analysed by engineers, we may form an opinion on the best of premises that is on simple fact.

The end of the drill should for an angle of 90°, that is to say the two cutting edges should fit in the corner of a right angle.

This shape will suit all materials, and will work well nearly always. The exceptions occur sometimes where an explanation cannot be found without a good deal of trouble. Having determined the shape of the end, which is often spoken of as sharpne ss or bluntness of the point, the acuteness of the cutting angle may be considered. Here we are confounded by the two forms of drill commonly used, one cutting in one direction only, as those used on a lathe do alway s, the other cutting in both directions, which is not an improvement even when used under most favorable circumstance.

The cutting edge should be made so that the clearanc e or angle of relief is 3°, and to give more clearance is only to make a mistake. Tools used on the hardest materials, as well as those used on the softest, are all equally cutting to t he best advantage with only 3° of clearance. Those drills that are supposed to cut both ways, but which really do very little better than scrape away the material, are made so that the two bevels, which produce the cutt ing edge, enclose about 27°.

Hardening comes next, and is p erhaps the most critical point in making nearly all tools. The secret of success is to heat your particular piece of steel the least possible temperature to ensure its hardeni ng when it is suddenly cooled in oil. What this temperature is must be found by experiment, it will depend chiefly upon the amount of carbon in the steel, and the higher the pe rcentage, and consequently the "better" the quality of the steel, the lower will be the temperature at which it will harden.

Tempering may be dispensed with if the drill has been properly treated every time it has been through the fire.

To put in a New Center Pivot.

IT OCCURS quite often, says W. Sch. in *Deutsche Uhrmacher Zeitung*, that one of the center pivots is badly worn, and can no longer be made to serve by polishing; nevertheless, many repairers try to do it, with the one never-failing result, viz: it breaks under the polishing file. In such cases, the pinion must be renewed, if the repairer cannot put in a new pivot.

Some time ago, I learned a new knack from a very skilful journeyman by which one may put a pivot into a center pinion just as easily and nicely as can be done into a balance staff, etc. If correctly made, the pivot sits as firmly as if it were of one piece with the pinion; this is not injured at all, and the place where inserted cannot be recognized after finishing the repair, and which of the two pivots has been inserted.

No one can say that this is a piece of botch-work, and I make use of this method and advise others to do the same thing, not only on account of the saving of time, but also in all cases when I encounter a defective center pivot in a fine-grade watch. It is true, the good repairer will by using sufficient time, make just as good a new pinion as the old was, still and all, the wheel will be strained more or less by taking it off; but this danger is entirely excluded by inserting a new pivot. Do as follows:

Mount the pinion first upon a turning arbor and turn off smoothly the injured pivot, without, however, injuring the burnishing of the pivot shoulder. Then choose a drill corresponding exactly to the thickness of the new pivot, and take the wheel directly upon the lathe, by letting the other pivot run backward in a center, while in front you have set the T-rest squarely to the wheel and have laid the drill upon it. You may hereby let the carrier pin operate directly upon the wheel crossing, and in this manner you drill into the pinion a hole which must be about 1½ times as deep as the pivot is long.

After having performed the drilling, begin with the pivot by making a steel tube the inner width of which truly corresponds to the thickness of the center staff. Before it is finished, harden and anneal it blue, then reduce it by grinding so that it fits precisely and truly into the hole, after which burnish it handsomely. Corresponding to the bottom of the hole, taper the entering end of the tube, afterward insert it and drive it home with a few taps of the hammer. If necessary, chamfer the hole in the center pinion, shorten the new pivot to its correct length and the job is ready, without occupying more than one-fourth, or at most one-third the time necessary for inserting a new pinion. Not a trace can be seen at the pivot shoulder, provided the job has been done in a workmanlike manner. In this manner it is possible to oftentimes preserve a handsome and well-made center pinion, which could never be replaced by one bought in some material store.

New Clickwork for Stem-winders.

MESSRS. LOUIS BRANDT & FILS, of Biel, Switzerland, have patented a clickwork, by which the inventors apparently have endeavored to make this part of the watch mechanism as simple as possible, and of such a convenient form that the use of a separate click is superfluous. The disc-spring consists actually only of an equally thick piece of sheet steel in form of a double angle. Fig. 1 is an upper view of the disc work, while fig. 2 gives a perspective view of the barrel bridge from below.

In fig. 1 *P* is the plate upon which the large barrel bridge *B* is screwed. The latter contains at *A* the recess for the small winding wheel, which stands in depthing with the ratchet wheel *S* in such a manner that this turns at winding in the direction of the arrow. The recess for the ratchet wheel *S* is perforated at *o*, and through this opening reaches from below the projection *n* of the clickspring *f*, which depths into the ratchet wheel teeth.

Both the shape and fastening of the clickspring *f* is plainly visible in fig. 2. The recess *D* for the barrel upon the lower side of

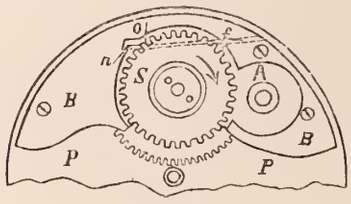


FIG. 1.

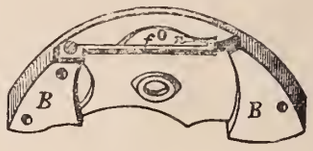


FIG. 2.

the bridge *B* is only about one-half the depth of the thickness o the bridge. In the part which remained standing is from the outside of the bridge a shoulder fraised on, upon which the clickspring *f* is screwed on in such a manner that it lies flat upon it throughout its entire length, its lower face ending smoothly with the recess *D*, while the projection *n* on the free end of the clickspring protrudes through the above mentioned opening *o*, and is exactly of such a length that it catches securely into the ratchet teeth, as shown in fig 1.

The performance of this clickwork is perfectly secure, in spite of its great simplicity. It is true, the clickspring is lifted fairly high during the passage of the ratchet teeth, because the rotation of the ratchet wheels occurs in the direction against the place of fastening of the clickspring; but the elastic part is very long, and the entire spring may be made fairly then, and therefore very elastic, because the pressure of the ratchet wheel teeth is not exerted directly upon the clickspring, but chiefly upon the shoulder of the barrel bridge, against which the clickspring braces itself. The danger of a fracture of the clickspring is very small. It is barely worth mentioning that, in view of the simple form and equal thickness of the clickspring it is readily made from a piece of sheet steel, while its cost is very small.

SECURES AUTOMATICALLY
ON PERFECTLY PLAIN SMOOTH WIRE

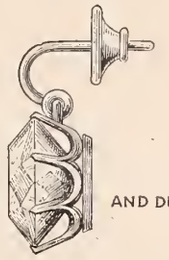
MAGIC NUT

PATENTED, JANUARY 29, 1889.

SUPERSEDES THE OLD METHOD OF SCREW OR NOTCHED WIRE.



EASILY ADJUSTED AND DURABLE



ACTUAL SIZE OF NUT



FOR
SCARF PINS,
EAR BUTTONS,
PENDENT EAR DROPS,
HATPINS, STUDS,
ETC.

SEXTON BROS. & WASHBURN
MANUFACTURERS OF DIAMOND JEWELRY
41 & 43 MAIDEN LANE NEW-YORK.

WARNING!

Owing to the unprecedented popularity of the

"SHAKESPEARE BRACELET,"

Certain parties unknown to the inventor are manufacturing it in violation of his rights.

THE TRADE IS HEREBY WARNED

That the undersigned is the sole inventor and owner by letters patent, granted December 24, 1889, of the right to make "The Shakespeare Bracelet," and that in buying these goods of anyone but me or my agent they

INCUR PERSONAL LIABILITY.

FRANK H. LA PIERRE,

18 East 14th Street, New York.



WHAT THEY SAY.

Spokane Falls, Mont., Feb. 8, 1890.
Cannot afford to be without THE CIRCULAR. D. F. WETZEL.

"We would say that we owe more to THE CIRCULAR than to any other means for information on technical matters." HOROLOGERS.

Augusta, Me., Feb. 18, 1890.
We are always pleased to greet THE CIRCULAR, and the February number was especially satisfactory. LORD & LOWELL.

Pine Bluff, Ark., Feb. 20, 1890.
Please send index for volume XX. Have got 15 volumes of THE CIRCULAR complete from 1875 to date. SIDNEY SMITH.

Newark, N. J., Feb. 13, 1890.
Your February number is a beauty in every sense of the word.
A. D. SELOVER.

North Platte, Neb., Feb. 13, 1890.
Enclose $2. Received sample number; just the book we want.
C. S. CLINTON.

Rochester, Minn., Feb. 14, 1890.
I would not spare THE CIRCULAR for twice the amount.
J. B. BLICKLE.

Key West, Fla., Feb. 13, 1890.
I would rather do without my cigars than be without THE CIRCULAR. WILLIAM MCKILLIP.

Minersville, Pa., Feb. 14, 1890.
I have been getting THE CIRCULAR from the start.
JOSEPH GERZ.

Ozark, Ala., Feb. 17, 1890.
I like THE CIRCULAR. It has not only been interesting but useful to me, and I don't wish to miss a number. JOS. L. AVERY.

Downieville, Cal., Feb. 11, 1890.
Have taken THE CIRCULAR too long to be without it now.
H. H. PURDY.

Lexington, Mo., Jan. 13, 1890.
Can't do without THE CIRCULAR; best trade journal published.
GRIMES & VENATLE.

Beaufort, S. C., Jan. 14, 1890.
We would not think of doing business without THE CIRCULAR.
WHITMAN & BRISTOL.

Lafayette, Ala., Feb. 14, 1890.
We have opened a new jewelry store here, and we want your CIRCULAR to help us through the world.
NICHOLSON & LEFFLER.

East Las Vegas, N. M., Jan. 29, 1890.
As I was a subscriber to Vol. 1, and for five to eight years thereafter, I again send my subscription after a rest of ten years.
W. H. SEEWALD.

Northville, Mich., Feb. 1, 1890.
Have taken it so long, 17 years, I think, that I should feel something lacking if it did not make its appearance the first of each month. A. E. ROCKWELL.

Philadelphia, Pa., Feb. 1, 1890.
I keep THE CIRCULARS with the intention of binding them. * * * Hope to enjoy the reading of THE CIRCULAR in the future as in the past. GEO. S. CULLEN.

Richmond, Va., Feb. 7, 1890.
Your last (February) number is very fine and contains much interesting matter. Hope you will in time publish your "centennial" number. GODDARD & MOSES.

Santa Rosa, Cal., Jan. 18, 1890.
I guess I am among your oldest subscribers, and I have THE CIRCULAR bound every year, and now have quite a nice library of itself. So I would not miss THE CIRCULAR for any price.
JOHN HOOD.

Westerly, R. I., Jan. 23, 1890.
We would not like to be without THE CIRCULAR'S monthly visits, and we scan its pages for something new in illustrations, in novelties and even in styles of advertising, seldom failing to gain information and pleasure from their perusal. E. N. DENISON & CO.

Pueblo, Colo., Feb. 17, 1890.
Enclosed please find $2 for another year's subscription to your valuable paper. The February number is full of information and we out here in the far west appreciate it very much.
CHAS. OTERO.

Omaha, Neb., Feb. 13, 1890.
We have received the February number of THE CIRCULAR, have become thoroughly conversant with its contents, and can say that we think it the most interesting number published. For eighteen years I have taken THE CIRCULAR and it has become like gold dollars on our desk. C. S. RAYMOND.

Philadelphia, Feb. 13, 1890.
We all feel very greatly honored to have the very able assistance of such a handsome and elegant journal. It gives the writer great pleasure to acknowledge the last issue of THE CIRCULAR, the most complete and grand production edited and distributed to the jewelry trade, which sentiments, I can assure you, are voiced by a very large majority of the Pennsylvania Retail Jewelers' Association.
JOS. W. FORSYTH, JR.,
Secretary Pennsylvania Retail Jewelers' Association.

Cleveland, Ohio, Feb. 7, 1890.
I must congratulate those connected with THE CIRCULAR upon the splendid journal they have just issued; it beats them all, not alone in its typographical appearance, but in the valuable and high class papers contributed by writers who know what they are writing about. The article on time signals is especially valuable as it gives the *modus operandi* employed by the government astronomers to secure and give to the public absolutely correct time, which so few outside scientific circles know anything about. ROYAL COWLES.



[The Circular is not responsible for the opinions or statements of contributors, but is willing to accord space to all who desire to write on subjects of interest to the jewelry trade. All communications must be accompanied by a responsible name as a guarantee of good faith. No attention will be paid to anonymous letters. Correspondence solicited.]

OPTICAL PROBLEMS.

Norristown, Pa., Jan. 25, 1890.

To the Editor of the Jewelers' Circular:

Will Dr. Bucklin kindly give me the desired information, through your esteemed medium, on the following subject?

A grocer, age 56, who has been wearing minus spherical glasses, with little benefit, calls for better glasses. His vision is as follows:

V. $\frac{15}{200}$, R. V. $\frac{15}{200}$, L V., $\frac{15}{200}$,
R. V. $\frac{15}{20}$ with — 5.50s. ⌒ + .50c. ax. 60°
L. V. $\frac{15}{15}$ partly with — 4.00s. ⌒ + .50c. ax. 145°
V. $\frac{15}{15}$ partly, both eyes.

What should be the correct (theoretically) formula for his reading glasses? And with them what should be his "near point" and "far point" for Snellen's D —0.50 type X. Y. Z.

[In answer to the above letter it is evident, First, the individual is myopis in the right eye about 5.50 dioptrics and 4.00 dioptrics in the left eye.

The improvements of vision has been very great by the formula given in the above letter.

R—5.56 ⌒ + .50c. ax. 60°
L—4.00 ⌒ + .50c. ax. 145°

It is, however, evident from this formula that the myopia was a little over corrected. When each eye was tested separately the black lines on the face were probably reversed. If the above formula produces satisfactory vision the results should have been better accomplished by the following:

R.—5.00 ⌒ — .50c. ax. 150°
L.—3.50 ⌒ — .50c. ax. 55°

The usual degree of presbyopia at this age is about 2 dioptrics, which taken from the myopis lens would leave the following formula for reading:

R.—3.00 ⌒ — .50c. ax. 150°
L.—1.50 ⌒ — .50c. ax. 55°

There would be the theoretical formulae computed from the facts as given. Myopia persons usually have reduced range of accommodation in which case the desired correction at the reading distance can only be determined by direct experiment.

Those students having attended the school of optics will find the correction of myopic persons fully considered under the notes, 'Reading glasses on myopia."—Dr. Bucklin].

THE PROPOSED LEAGUE AMENDMENTS.

New York, Feb. 5, 1890.

To the Editor of the Jewelers' Circular:

The proposer of the motion for the formation of a half-rate or second section membership in the Jewelers' League requests or, if necessary, challenges any member to state in what manner the adoption of the motion (as proposed) would be detrimental to the League. For the good of the League state if such is the fact, and so (in addition to the good done for the League) alter the opinion of the writer who thinks that if the members will lay aside all prejudice to such a measure, thinking only of the welfare of the League, and just think and figure for themselves how, if adopted, the measure would have operated. A motion of a similar nature will be passed almost unanimously at the next annual meeting of the League. An assessment at the present time yields enough to pay $5,000; if we have half-rate members and one of them dies we shall be assessed one-half the amount that we are assessed at present, the yield of which would be sufficient to pay $2,500. At present I am open to conviction. It seems so simple in its operation that its adoption would not have caused the slightest fraction to the present smooth running of the executive department of the League. In conclusion I would like to call attention to the fact that the liability to death of A, B or C is the same whether they belong to first or second section.

I read your report of the League Annual Meeting with much interest, it being very complete, more so, perhaps than the reports in the other journals; but, as did those journals, you omitted the publication of the wording of the amendment, which I read at the commencement of the proceedings and which was as follows:

Resolved, that it is the sense and wish of this assembly to adopt the following propositions and if adopted by a two-third vote, as is required by other amendments to the constitution, that in that event it be referred to the counsel of the League to be formulated into the necessary amendments to the constitution and by-laws necessary to carry out the propositions or provisions thereof, and to be reported to a special meeting of the League to be held at the earliest possible date.

Resolved, that we form a "half rate" or "second section" membership, present members not to be eligible to join the same before July 1st, 1890. Half rate or second section members to pay, and be in all respects the same as full rate or first section, with the exception that they pay one-half the amount per assessment, and their beneficiaries receive one-half the amount that the beneficiaries of a full rate or first section member would receive.

Present members joining the half rate to be assessed according to the age at which they joined the League.

E. H. Brown.

BACK NUMBERS TO BUY AND SELL.

Northville, Mich., Feb. 1, 1890.

To the Editor of the Jewelers' Circular:

I have Vols. 17 and 18 complete, and would sell the whole for $10. I wish to sell the whole or none. A. E. Rockwell.

BACK NUMBERS TO BUY AND SELL.

To the Editor of the Jewelers' Circular.

I have nearly all the numbers running back twenty years. Would like to dispose of them at a reasonable price.

Address, The Jewelers' Circular.

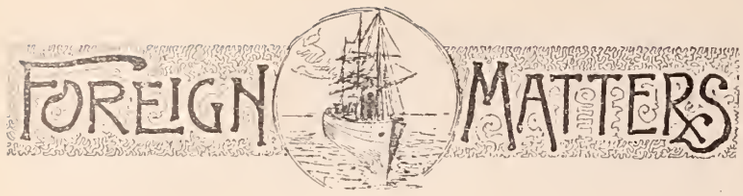
East Las Vegas, N. M., Jan. 29, 1890.

To the Editor of the Jewelers' Circular:

Should any of your readers be short some of the early numbers of The Circular, or of the American or English horological journals, or other like publications, I may be able to furnish them.

W. H. Seewald.

Doubtful Story.—A fairly doubtful story is making the rounds of the French press. During her last sojourn at Naples, the Empress Frederic visited a jewelry store, and, struck by the beauty of a silver cup, she decided to purchase it. While she was engaged in conversation with the jeweler, her daughter examined the articles exposed for sale in the showcase. The jeweler became alarmed at the attitude of the young girls who were stooping down, in order to examine the articles as closely as possible. He turned his attention principally to them, paying but little heed to the conversation of the Empress, whom he did not know. When kindly she requested him to weigh the cup, he thought the demand merely a ruse for robbing him, and was more than ever convinced that he had a set of shop thieves in his store. He therefore made a short and brutal reply, whereupon the Empress and her daughters left the store in dudgeon.



[From our Special Correspondent.]

GOOD OUTLOOK FOR BRITISH TRADE.—PEACE AMONG THE EUROPEAN POWERS.—INTEREST IN TRADE SCHOOLS.—THE CO-OPERATIVE TENDENCY IN ENGLAND.—OPENING OF THE PRESCOT WATCH FACTORY.—DIAMOND CUTTERS LOOKING LONDONWARD.

London, February 10, 1889.

There is abundant reason for satisfaction with the present position of the trade of this country. On every hand there are signs of activity, and more especially in those heavy industries, iron, steel and coal, which always have such a powerful influence upon every other. Money is more freely circulated just now than it has been for many years, and thus it happens that an increased share of it finds its way into the special industries with which I am more particularly connected. I can understand how in your vast continent the proceedings of other nations of the world interfere but little with the general course of your trade. It is very different with us. Our close proximity to the numerous European countries and our consequent frequent intercourse, quite apart from our commercial relations with them, render us peculiarly sensitive to the changes that affect them. The quietude which to so great an extent prevails in other countries contributes largely to the prosperity we are now experiencing. It is a long time since the prospects of peace were so assuring as they are at the commencement of this year.

PEACE AMONG THE EUROPEAN POWERS.

In 1880 there were signs of a greatly improved trade, but there were then no such indications of continued peace as present themselves to day. The past decade has been marked by great anxiety and considerable embarrassment in our commercial affairs, yet there has been marked progress As regards the manufacturing and jobbing jewelry trade there have been trouble and losses, but there has, notwithstanding, been a marked improvement, and the present position of our industries is undoubtedly good. In estimating the amount of business done, we must not lose sight of the fact that the great Exhibition at Paris has caused a large amount of money to be spent in French jewelry that under other circumstances would have been spent in London. This affected our London retailers, no doubt, but our London and Birmingham manufacturers who exhibited at Paris reaped their full share of the benefits of the sales of the Exhibition.

TECHNICAL EDUCATION ACT.

The Paris Exhibition has, I hope, conferred a greater benefit on our British manufacturers than is represented by the extent of sales effected there. It has brought them into contact with jewelers' schools there. Our Technical Education Act was passed last session so that the success of industrial art schools on the continent could have been brought under the notice of our trade at a better time. I look to the working of this act to have an important influence in the development and extension of the higher branches of the jeweler's art. The happy combination of theoretical art with the practical every day work, which it will be the business of technical schools to cultivate, must have the effect of making our workmen more artistic and our natural artists better workmen. This is just what we want. We want more original art in our productions. When we begin to have a regular supply of this, the jewelry and kindred trades of this country will have a run of success which they have never yet experienced.

DEMAND FOR BETTER CLASS GOODS.

A feature of our jewelry trade of the past year has been the very decided improvement of the better class branches. As this has been accompanied by a corresponding decadence in the trade in cheaper articles, the inference is that people generally have more money to spend, and that their taste for first-class design and workmanship is improving.

As far as London is concerned, our export business has shown a decided improvement over former years, and particularly to our Colonies. I should like to see this branch of trade followed up more persistently than it has been. It is quite right to look well after our home requirements, but I fancy there is more to be made in the future by discovering and then cultivating new markets for our production.

THE PRESENT CO-OPERATIVE TENDENCY.

Another feature of our industries that has struck me at present is the absence of any great friction between employers and employed. Disputes and some misunderstandings there have been—as I suppose there always will be while man and master are human—but if I remember rightly, there has been no strike of working jewelers during the past year. I am not disposed to attribute this to chance, but to the better comprehension of the united interests of both parties. It is astonishing to me that the fact has not been more generally admitted long since, that in every industry the interests of capital and labor are one. This is a subject which is receiving special attention at present in many of our industries, and attempts are being made to enable labor to share profits with capital.

Co-operation is no longer an experiment in the selling and buying departments of trade. In this connection it has been tried and approved in every class of society. It has also been tried in connection with the productive departments of some of our industries, and there is evidence that so far as the system has had anything like a fair trial it has succeeded there also That it has not been more extensively tried is not because of any defect in the principle, but because we do not seem to have hit upon a happy way of applying it. There is a great difference between buying and selling commodities and buying and selling the labor which produces them. Co-operation in production has always been the aim of those who have worked most in the interest of labor, and it appears to be an economic law that employer and employed can only work heartily and earnestly for their mutual benefit by the adoption of some system of profit sharing. I do not know any industry that lends itself more favorably to this system than ours does, and I hope to see it given a fair trial and that soon. I believe this would do more than anything else to create and maintain a good understanding between both parties, and would certainly prevent anything like strikes.

I need not here refer to the principal topic of conversation in our London manufactories, warehouses and ships, further than to say that the thieves of the Hatton Garden mail bag with its precious contents have not been discovered. Opinion is much divided as to the real value of the plunder, though there is no doubt it was very great. It is almost as silly for me to repeat, as it is for our postal authorities to announce that an attendant is now specially appointed to accompany the letter carriers in the Hatton Garden district. We can all be wise *after* an event, but I, for one, think it was not too much to expect that with the experience of a former postal robbery of great magnitude, *not twenty yards* from the scene of the recent one, the postal or the police authorities, or both, might have acquired sufficient wisdom to have made this robbery impossible.

From Hatton Garden to diamonds is a very natural and easy transition. The diamond market has been quiet, as it usually is at this season, but this year it has been more so by reason of the speculative character of recent business. The diamond corner has had a very disturbing effect all through the trade, and prices still show an upward tendency.

OPENING OF THE PRESCOT WATCH FACTORY.

Prescot for many years has enjoyed the reputation of being the center of the best watch movement-making industry in this country, and until comparatively recent years its inhabitants reaped the benefits of that reputation by carrying on a prosperous trade with all parts of the world. That happy state of affairs, however, has for several years unfortunately ceased to exist, not because the watches made at Prescot are in any way below their old standard of perfection, but through the keen competition of American and continental manufacturers. These foreign competitors, by the adoption of new and intricate machinery, were enabled to cheapen the production of watch movements, and, what was stlll worse for the Prescot manufacturers, some even put inferior workmanship into English hall-marked cases and passed them off as English made watches. Piracy of this nature, however, has been stopped by the passing of the Merchandise Marks Act, immediately after which measure the Lancashire watch industry experienced a slight improvement. But that the old method of manufacture could not possibly compete with the new and elaborate machinery in use abroad was obvious to the Prescot men, and they saw that something would have to be done if their town was to retain its old industry. Accordingly Mr. T. P. Hewitt and several other manufacturers determined to make an effort to revive the trade, and this effort has resulted in the formation of the Lancashire Watch Company, with a capital of £50,000. The company commenced operations about a year ago, and, even whilst laboring under the disadvantage of carrying on the work in local workshops and with only partial machinery it has increased the trade during the year in a remarkable manner. Many of the watchmakers belonging to the town who, through lack of work, have had to seek a living in other spheres of labor, have returned to their old handicraft, and when the new factory, which was opened on the 11th of January, is in full working order, more of them will no doubt return. Hitherto only watch movements have been made, and these are sent to Coventry, Birmingham, London and other towns to be finished and cased. The company, however, intend in time to go a step further, and to send forth to the market complete Prescot watches. The new factory, which we understand is the largest and most complete in England, is a long one-story building capable of accommodating nearly 600 hands. The roof is shaped like the teeth of a saw, the sloping sides of which towards the north are of glass, to admit a good light. The lathes, all of which are fitted with the most modern improvements, are placed side by side on long benches running nearly the entire length of the building, and the motive power for working the various machines is a compound horizontal "horologer" engine. The company intend to spare no expense to ensure perfection in the work they turn out. Besides the main workshop there is a large room fitted up with machinery for tool making, and the engine room and commercial offices are at the front of the building.

The opening day was celebrated with great rejoicing in the town. The town buildings and the factory itself were dressed with flags and bunting. Speeches, enthusiastically cheered, were made by Mr. T. P. Hewitt and Lord Derby, after which his lordship was conducted to the engine room and turned on the steam to set the factory going. Other addresses were made, showing the prosperous stage at which the enterprise had arrived. The statement was made that the company was already in a position to declare a dividend of 10 per cent. It is proposed to turn out cases as well as movements eventually.

DIAMOND CUTTERS LOOKING LONDONWARDS.

The trouble in connection with the diamond cutting trade at Antwerp is growing much more serious than was at first apprehended, and a number of the workmen have now arranged to leave that place and set up for themselves in Paris. The Amsterdam workmen, who are suffering from the crisis even more than their colleagues at Antwerp, have their eyes upon London, it is said, as the future home of their craft. Seeing that all the diamonds which are now unearthed come from British territory, it should not be a matter for much wonder if London does become the head center of the cutting industry. VIGILANT.



[FROM OUR SPECIAL CORRESPONDENT.]

CHICAGO, February 22, 1890.

Collections during the past month have been fair and no failures have occurred to mar the even tenor of the month's trade. But little has occurred, in fact, to either mar or beautify it. In short, it has been the dullest in business and in events of the year. This occasions no surprise, however, as from January 15 to March 15 little is expected.

The jewelers are all doing everything that lies in their power to assist the campaign committee to secure the World's Fair for Chicago. Before this is published the much-vexed question will in all probability have been settled; at the present time, however, the feeling is one of genuine hope, and should Congress deem some other city worthier of the honor, not only surprise but a great deal of disappointment will be occasioned. The holding of the fair here means volumes to the trade, and meaning such the amount of interest existing may easily be imagined. Mr. Morse, of Morse, Mitchell & Williams, is confident that the efforts put forth by Chicago will not be in vain, and he backs up his belief with some of his usually cogent reasoning. Mr. Peck, of the Waterbury Clock Company, entertains fear that should Chicago be defeated a reaction in trade will be an inevitable result.

C. J. Corey, the popular western manager of the Pairpoint Manufacturing Company, has had a force of men at work decorating his store, which, in consequence, is now one of the most attractive in the trade. Mr. Corey is much pleased with the success that has since his establishment here as western manager crowned his efforts, and his views of the future are roseate hued.

Mr. Burchard, of Simpson, Hall, Miller & Co, has been spending a week or ten days in Washington, and is understood to be putting in a neat amount of quiet, earnest work in behalf of the World's Fair. Judgingfrom his accredited accomplishments as a linguist and logician among his business associates of long standing, it seems safe to say that his efforts in Washington were by the committee evidently appreciated.

Mr. Prentice, of the Gorham Mfg. Co., has been in New York selecting goods for the spring trade. He is of opinion that trade will be good and his purchases have been heavy.

Julius Kahn, well known as a traveling salesman for H Oppenheimer has been buying a large and well-assorted stock of jewelry preparatory to opening a fine retail store at 200 Grand avenue, Milwaukee. Mr. Kahn has earned an excellent reputation along the line of his route, and with him in this, his new venture, the good wishes of all who have had dealings with him will go.

Mr. Thearle, of C. H. Knights & Co., says that six men recently sent out by his firm report, without exception, that the prospects for spring trade are of a most encouraging kind, and that dealers accompany their reports with orders of generous size.

The annual banquet of the Chicago Jewelers' Association was held

on the evening of February 6, at the Auditorium, and was in every respect an unequivocal success. President H. S. Peck presided with felicitous grace. His address of welcome was full of wit and was keenly enjoyed. At the close he introduced Mayor Cregier who responded eloquently to the toast "Our City," and then Rev. Dr. Lorimer responded to the sentiment:

> "Dumb jewels often in their silent kind,
> More than quick words, do move a woman's mind."
>
> *Shakespeare.*

The next toast, "1892—Modesty in our claims, but persistent in our demands," was taken care of Mr. Franklin H. Head, ex-President of the Union League Club. Rabbi Hirsch spoke to a poetic selection from "Alonzo of Aragon," Mr. Frank H. Scott to a selection from Goldsmith, and venerable Judge Gary handled with ease the toast, "The greatest glory of a free born people is to transmit that freedom to their children." The last toast was, "The noblest motive is the public good," and was ably dealt with by Thomas W. Hanford. That the menu was elabarate it is hardly necessary to mention. Suffice it sherefore to say that full justice was done to it. Among those present were:

President H. S, Peck, H. F. Hahn, Ferd. W. Peck, J. S. Runnels, H. J. Vouwie, M. H. Berg, Paul Juergens, W. F. Juergens, George E. Marshall, Geo. K. Harrington, C. R. Matson, H. M. Carle, William G. Pratt, W. H. Parcher, D. N. Smith, H. Musgrove, J. W. Meacham, W. H. Gleason, C. E. Hastings, B. L. Strasburger, M. C. Eppenstein, F. L. Smith, George Weiding, Frank H. Scott, L. W. Flershem, E. H. Eckfeldt, James J. Hoyt, S. H. Hale, James E. York, A. G. Schwab, A. T. Evans, H. R. Dyer, R. W. Cooley, E. B. Butler, George C. Kinsman, Thomas W. Handford, F. G. Thearle, Jr., A. E. Bentley, Judge O. H. Horton, Z H. Oppenheimer, W. A. Allen, T. F. Fessenden, George M. Smith, K. H. Clarke, Rev. George C. Lorimer, Rev. E. G. Hirsch, Abram Hart, Albert Wisher, M. Ellbogen, S. Anderson, Abner Hurd, W. G. Anderson, D. G. Hamilton, J. F. Talbot, M. N. Burchard, George Weiding, J. V. Ridgeway, A. L. Sercomb, T. C. Duncan, M. A. Mead, Joseph Alling, L. I. Lake, C. S. Jones, J. H. Sandman, C. P. Dungan, James W. Scott, W. F. Tompkins, Mayor Cregier, F. H. Brittain, C. H. Remy, W. H. Cloudman, A. L. Felsenthal, G. Serewicz, F. B. Rice, H. B. Dennison, Charles D. Seeburger, F. M. Sproehnle, George T. Boggs, J. E. Kasper, E. D. Barnum, Grove Sackett, Charles W. Fay, C. G. Rathgen, S. L. Joseph, E. V. Roddin, S. B. Buckmaster, C. H. Rolling, Franklin H. Head, Benjamin Allen, J. M. Flower, T. H. Purple, J. S. Townsend, E. A. Rich, A. A. Joseph, C. J. Corey, H. E. Howard, O. W. Wallis, W. M. Alister, H. H. Walton, J. Schnering, Joseph Ruff, C. L. Strobel, John F. Morse, A. R. Varian, W. Isbell, Solomon Kaiser, S. Muhr, Kenneth Barnhart, L. H. Pierce, Otto Young, Judge Gary, R. A. Kettle, C. K. Giles, O. W. Barrett, J. M. Cutter, L. Stein, L. Manheimer H. F. Stean, C. H. Knights, G. W. Church, George Hunter, G. P. Titus, W. D. Franklin, P. Lapp, H. M. Kingman, A. Wygant, E. W. Holden, Carlos H. Smith, George T. Gubbins, W, H. Wilson.

The first adverse criticism of the banquet is yet to be heard.

The suit of the Jewelers' Mercantile Agency, of New York, against R. G. Dun & Co., Chicago, for alleged libel, was given a hearing about the first of the month before Judge Tuthill of the City Court. The counsel for the defendant argued that the Mercantile Agency, being a foreign corporation, could not bring a suit for libel in an court of Illinois. The judge sustained the counsel's position and granted the plaintiff's attorneys the privilege of amending their complaint. An appeal was then immediately taken by the Jewelers' Mercantile Agency.

The salesrooms of the Towle Manufacturing Co., 149 State street, are stocked with a complete line of new goods to fill up the big gaps made by the holiday trade. No tastier or more original line of silverware was seen anywhere by your observer than adorns the shelves of their show rooms.

The appeal taken by the Dueber Watch Case Co., from the decision of the Circuit Court of Cook County, in their suit against Lapp & Flershem to recover for goods sold the latter, has been decided adversely to the applicant, the judge holding that the new evidence which the Dueber Co. claimed to have discovered since the trial should have been produced at the trial, as the Dueber Co. had full notice of the line of defense that would be taken by Lapp & Flershem, and abundant opportunity to prepare for it. Not to produce the evidence to rebut the claim of the defendants, the judge holds, shows downright negligence in the preparation for the trial by the agents of the Dueber Co., and on this ground he denied the motion for a new trial and affirmed the former judgment.

THE CIRCULAR'S OBSERVER.



[FROM OUR SPECIAL CORRESPONDENT.]

BOSTON, February 18, 1890.

Judge Adams in the second session was occupied pretty much all one forenoon recently hearing the government side of the case against Wm. W. Farr, a jeweler, doing business at 16 Green street, who is charged with receiving stolen goods. As brought out by the evidence of the witnesses, the property, which consists of silver and plated ware, was stolen from dwellings burglarized at night in Worcester, Gardiner and Lexington of this State, from September 21 down to last December. Mr. Richards, of Geo. H. Richards & Co., of this city, testified to the purchase of cerlain articles from the defendant, which Frank W. Smith, a manufacturer of silverware at Gardiner identified as having been made by him. When the defendant's establishment was visited quite a quantity of silverware was removed on suspicion that it had been stolen, and it was in response from the police notifications sent out from Boston that the owners were discovered. It may be added that after arguments of counsel Judge Adams, before rendering his decision, took occasion to say that the hearing just closed had been conducted with a thoroughness greater than had been bestowed upon any case he had yet been called upon to pass. He considered the case a most important one alike to the accused and to the commonwealth. "It is seldom," said he, "that such an abundance of testimony and good character, and coming from such various sources is presented in favor of a defendant. I cannot think that probable cause has been shown for holding him, and he is therefore discharged."

The Acme Silver Plating Co. has moved into its new quarters at Boylston Station, where they occupy a building 125x50 feet, four stories in height. They will greatly increase their production.

Alvan Clark & Sons, the famous telescope makers, of Cambridge, have been granted permission from Washington to import their ground glass discs free of duty.

Clough & Thayer have gone into insolvency. The liabilities are over $15,000, and it is a case of a 10 cent settlement.

Mayor A. C. Titcomb, of Newburyport, has been made Assistant Treasurer of the Lamson Consolidated Store Service Co. Mr. Titcomb is well known among jewelers.

Henry C. Foster, silversmith, has moved into the quarters at No. 8 Province Court, recently vacated by Calvin P. Couch.

A. H. Potter & Co. have renewed the lease of tneir establishment at 421 Washington street for one year from February 1. The rumor that they were to go out of business is erroneous.

It is now C. A. W. Crosby & Son. This is self explanatory.

N. G. Wood & Sons were awarded the contract for furnishing the prize cups for the Boston Athletic Association's February tournament.

Another bold daylight jewelry robbery has occurred to add to the already long list. This time it happened at 97 Main street, Charlestown, and N. Leonard was the victim. February 4 George H. Grubley was alone in the store at twelve o'clock when two men came in. One of them leaped over the counter, and, stunning Mr. Grubley with a blow, proceeded to hand out to his confederate all the gold watches in a case on the counter, a tray of rings, many of them set with stones, and a number of bracelets. As soon as they had left the store Mr. Grubley rushed to the door and gave the alarm. The value of the goods stolen is estimated at $1,500. A few days later John Mooney and Daniel Mullen were arrested, and nine of the stolen watches were found in their rooms. They are both old offenders.

The Boston Jewelers' Club held its annual meeting at the Boston Tavern this month. President Harwood occupied the chair. The

election of officers resulted as follows: President, Charles Harwood; Vice-President, M. N. Smith; Secretary and Treasurer, Irving Smith; Executive Committee, Andrew Faul, D. C. Percival, Charles Harwood. Arrangements were discussed for the annual dinner, which will take place at the Vendome. After a light lunch and a jolly good time the company broke up.

Frederick O. Lyon, jeweler, of Cambridge, has gone into insolvency.

Mr. Stone, of J. W. Tufts & Co. was seen and asked what he thought of the business this last month, and he said it had been very quiet, as it always is in January and February. The trade is slow and steady but very small. He expects about the first of April it will begin to improve.

Ripley, Howland & Co. are taking account of stock and are letting trade take care of itself. Though they have not kept an eye open for business, about March 1 they will begin to look about for a recurrence of trade. Notwithstanding this attempted relaxation on their part, they are running their factory ten hours a day with a full number of hands. There are some houses the trade won't let rest and Ripley, Howland & Co. are one of them.

Mr. Floyd, of Floyd, Pratt & Rounds, thinks the year promises well, but so far there is little disposition to push things manifested. He thinks trade will open later in the spring than usual. Many persons have been laid up by the bad, unseasonable weather, and many proprietors are on the sick list. Three of their force have been away from business for a month, but are back again now. This firm are considering plans for the enlargement of their establishment which will allow them to carry a larger line of goods.

Mr. Poor, of Shreve, Crump & Low, thinks trade rather duller than last year at the same time, and does not expect an increase before April.

M. T. Quimby & Company, 364 Washington street, who failed recently, have assets of $77,635; 89 in watch cases, fixtures and furniture, real estate and an interest in a jewelry house in the West, a bank account and good notes. The direct liabilities are $43,486.42, and the contingent liabilities are $17,331.46. Mr. Quimby offered sixty cents on the dollar, ten cents in cash in thirty days, fifteen cents in notes at four months, fifteen cents in notes at eight months, ten cents in notes at twelve months and ten cents in notes at sixteen months, unindorsed paper without interest. Several meetings of the creditors were held, and at a meeting held February 15, John Herbert reported for the arranging committee that the gross proceeds of the sale of all assets would not exceed $38,566.62. This sum includes equities in real estate of $6,050 in which Mrs. Quimby has the right of dower. They recommend the acceptance of forty-two cents on the dollar within thirty days, from February 14, 1890.

W. S. Crown & Company, wholesale and retail dealers in jewelry, 186 Washington street, have assigned to Morrill Bros. & Co. No detailed statement of assets and liabilities has as yet been prepared, but the firm claim a surplus of $18,000 to $20,000, and think that if they are granted an extension they can pay in full.

The Foremen's Association of the E. Howard watch and clock factory, held its regular annual dinner at the Quincy House on the evening of the 8th inst. This year the foremen were the guests of the company.

On Monday evening, February 3, the first annual dinner of the Boston Credit Jewelers' Association was held at the Boston Tavern. Alex. D. Cairns, presided.

On Tuesday evening, February 11, the Boston Jewelers' Club held its annual meeting at the Boston Tavern.

Among the speakers at the dinner of the Credit Jewelers' Association were Wm. S. Crown, Henry Holbrook, Frank G. Butler, Wm. M. Thompson, Mr. Burgin, of Gorden & Burgin, Harold B. Gray, Willis B. Foster, Chas. W. Emerson, Henry N. Kinports and Henry O. Barnett.

The Boston Merchants' Association has contributed $1,000 to the Grady Monument Fund.

LEON.

Dinner of the Jewelers' and Silversmith's Bowling League.

THE first annual dinner of the Jewelers' and Silversmiths' Bowling League of New York took place at Riccadonna's well-known restaurant on Union Square, on the evening of February 8th. Each one of the half hundred participants in the dinner will ever recollect it as a pleasant incident of his life.

The time for the banquet had been set for 8.30 o'clock, but owing to the tardiness of several Bohemians, who were determined to finish their suppers, irrespective of the anxiety of the fifty bowlers, the covers were not laid before 9 o'clock. But as nothing is lost, not even time, the intervening half hour was passed in many pleasant ways; some of the revellers in bevies, hied themselves to nspect the pictures in or the peculiar architecture of the interiors of the cafés of the Union Square Hotel or Morton House; others, retired to a room above the dining saloon and energetically engaged themselves in introducing their numerous friends to numerous other friends, and in thoroughly mixing up their hats and trappings, so that when the dinner was over, the diners would feel quite content to find any hat or any umbrella, no matter of what size or quality.

Two tables were arranged in T fashion, that of the speakers forming the head. The fifty smiling faces displayed above the festive board belonged respectively to the following gentlemen:

At the speakers' table. C. Clark, S. B. Butler, E. W. Gavey, W. E. Balch, J. W. Miles and W. Eaton; at the laity's table, G Wells. E. B. Sweetzer, L. S. Rubvia, E. B. Werner, E. B. Medlen, C. Simmons, A. H. White, J. T. McGowan, G. Egbert, J. K. Lees, W. C. White, C. Smith, G. L. White, J. Nunan, H. J. Hall, H. E. Hull, H. McMurray, J. C. Hall, E. B. Foley, C. Hill, T. M. Nelson, A. M. Ackerman, L. B. Neassa, E. Shackelton, W. Ferns, W. S. Shaw, R. Ferns, H. Boese, A. H. Dickinson, A. L. Thrall, T. Davies, W. C. Heydecker, W. F. Cannon, F. A Kelly, W. Cunningham, E. C. Bosworth, B. Eaton, G. H. Ford. W. L. Cook and A. W. Foster.

The toastmaster of the evening was E. W. Gavey with Tiffany & Co., who introduced J. W. Miles of the Meriden Britannia Co., as the first speaker, to respond to the toast,

The Benefits of Fraternity. "*True friendship between man and man is infinite and immortal.*"—*Plato.* The exceeding merit of the response, combined with the perfect elocution of the speaker held the attention of the assemblage, which had previously begun to wander, and excited hearty laughter and eager applause The speech was quite lengthy, contained witty and apposite stories, and displayed considerable philosophy and erudition.

W. S. Eaton, Jr., with Tiffany & Co., was the next speaker, and responded to the following toast:

The Champion of the League.—"*Thou hast beat me out, and I have nightly since dreamt of encounters twixt thyself and me.*" *Shakespeare* Mr. Eaton's puns excited considerable mirth and he was applauded to the echo. In lieu of a speech J. C. Clark of Theo. B. Starr rendered an original song, that had a far-away suggestion of something Sir Arthur Sullivan has written. W. E. Balch's response to the toast, "*Our Boys—and Sally had a baby and the baby had red hair.* though remarkably brief was most enthusiastically and tumultously applauded. S. B. Butler, with the Meriden Company responded in witty terms to the toast. "*The success of our Dinner.*" Mr. Burns, with Tiffany & Co., effectively rendered "Heart Bowed Down" and "The Bridge," and J. F. McGowan, the League's poet, excited the risibilities of the assemblage to a most vociferous degree by an original poem. The banquet, *per se*, was then over, and all felt with Thackeray, that one of the greatest pleasures in life is to dine with one's friends.

The Jewelers' & Silversmiths' Bowling League is composed of a club from the following establishments: Gorham Mfg. Co., Tiffany & Co., Meriden Britannia Co., Whiting Mfg Co., and Theo. B. Starr, containing twenty-five members in all. In the tournament recently held, W. S. Eaton, Jr. won first award, a handsome gold-headed cane; and E. W. Gavey, second award, a pair of gold link sleeve buttons. It is the intention of the League to form one strong club of ten men consisting of the pick of the twenty-five members.

Obituary.

WILLIAM M. COWAN.

On the evening of February 10, after a brief illness, expired one of the most prominent men in the silverware trade of the country, William M. Cowan, vice-president of the Whiting Mfg Co., New York. The death occurred in Providence, R. I., at the residence of the widow of his deceased cousin, George H. Corliss, and was a complete surprise to his many friends, who were not aware that he was seriously ill.



WILLIAM M. COWAN.

Mr. Cowan first saw the light in Greenwich, Washington county, New York, in September, 1825. His parents were well-to-do, and he received a fair education. At about the age of twenty years, he left his home and went to New York City, where he took a clerical position in the New York office of the old jewelry house of Tifft & Whiting, of North Attleboro, Mass. The firm at that time manufactured a line of so called soft-soldered gold jewelry and sterling silver wares.

He remained with the firm, and displayed a particular aptitude for business. About 1851 he was entered as partner, the firm name being changed to Tifft, Whiting & Co. He had charge of the New York office, then at 170 Broadway. About this time rolled-plate jewelry came into vogue, and the firm entered largely into its manufacture, though it retained its silverware department.

In 1866, after the firm had passed through several changes, the then just organized Whiting Mf'g. Co., bought out their plant and silver department, and commenced in the small factory the manufacture of silverware upon a large scale. Mr. Cowan was vice-president of the new company, which position he retained until his death; but since June 1888, he had not been actively engaged in the affairs of the company. At that time through the death of George H. Corliss, the inventor of the great Corliss engine, and president of the Corliss Steam Engine Co., Providence, Mr. Cowan, who had inactively been vice-president of the company for a number of years, became its acting president and treasurer, and relinquished his active connection with the Whiting Co.

At a special meeting of the Board of Trustees of the Whiting Mf'g Co. held on Tueseay, Feb. 11, 1890, the following resolutions were adopted:

That the Trustees of the Company have received with profound sorrow, the announcement of the death of their esteemed vice-president, William M. Cowan.

Resolved, That in recording the sad event, we deplore the loss of an officer of exceptional honor, integrity and ability and of an associate uniformly kind and courteous.

Resolved, That a copy of the foregoing be transmitted to his family, with assurance of our deep sympathy in the loss which they have sustained.

The above resolutions convey an idea of the deep respect in which the deceased was held. Methodical to a degree, thoroughly gentlemanly on all occasions, perfect in integrity, regular in his habits and free from the small vices, he combined the essentials of a well-balanced business man. He stood well in society and was popular in business circles. He always remained a bachelor, and leaves of his family four brothers and a sister.

The obsequies took place on February 12, at Providence, R. I. the interment being at the same place.

JAMES FRICKER.

James Fricker, of James Fricker & Brother, Americus, Ga., and formerly of Danville, Va., died on February 6, at Cleveland, Ohio, after a short illness. He had but recently returned in good health from a trip abroad, and was just settling down at home when he suddenly sickened. The deceased was born in Jefferson, Ohio, on Feb. 25, 1838. He was well-known in the jewelry trade as an honest, industrious and successful tradesman, and his unexpected death will cause pain to a large circle of friends.

EDWARD H. AYRES.

Edward H. Ayres, the well-known jeweler of Elmira, New York, died on the evening of Feb. 10, after a three-month's illness. He was a graduate of the public schools of his town, and entered the jewelry store of his father, Socrates Ayres, early in life. The deceased was but 35 years of age and unmarried.

ROYAL E. GEETING.

On Feb. 13, Royal E. Geeting, the surviving member of R. E. Geeting & Brother, of Washington, Ind., died at McKeesport, Pa., of malarial fever. He had been in poor health since the death of his brother and partner C. W. Geeting, on Aug. 15, 1889. The deceased was thirty-three years of age. He and his brother engaged in the jewelry business at Washington, Ind., ten years ago, and build up a prosperous trade. He leaves a widow and three children The business will be closed out by his administrator.

GEORGE LEONABD CLARKE.

The death of George Leonard Clarke, of Clarke, Black & Co., Providence, on February 11, caused considerable surprise, as he had been ill but five days.

Mr. Clarke had been connected with the jewelry business about eight years, formerly as a member of Nichols, Black & Co., and latterly as a member of their successors, Clarke, Black & Co. He was born in Norton, Mass., August 10, 1813, and entered commercial business as an office boy. As a young man he was an active member of the Liberty party and afterward was a Free Soiler. At the organization of the Republican party he affiliated with it. He was repeatedly elected to the General Assembly of Rhode Island, and in 1866 was Speaker of the House In April, 1869, he was elected State Senator, and in May of the same year was chosen Mayor of Providence. At the expiration of his term he was elected Alderman from the First Ward, without opposition, and served in that capacity until he declined a re-election.

The deceased was for many years one of the Board of Commissioners of the Dexter Donation and was a member of the school committee for several terms. He leaves a son, Prescott O. Clarke, who is connected with Clarke, Black & Co. and two married daughters.

A Handsome Sign for the Asking.

The Wm. Rogers Mfg. Co., Hartford, Conn., are distributing to the trade some very handsome black card board signs with gilt-lettered announcement of their name and trade mark. In the center in large letters is the word "Rogers," between two of the well known anchors that distinguish the company's brand of Rogers goods. Below is the company's name and address. This sign which if placed in the show window or on the walls of the store, has a very ornamental appearance, will be sent to dealers on receipt of business card. Readers of THE CIRCULAR are requested to mention this paper in sending in their applications.

PARIS GOSSIP.

[From Our Special Correspondent.]

THE LAST OF THE INFLUENZA.—SECOND-HAND "EXPOSITION GOODS."—WEDDING GIFTS AND NOVELTIES OF THE SEASON.—NATURE THE SILVERSMITH'S TRUE SOURCE OF INSPIRATION.—THE ARCHITECT AND THE SCULPTOR HIS CO-WORKERS.—VASE BY FROMENT-MEURICE, DESIGN BY SEDILLE.

Paris, February 17, 1890.

It might have been expected that business, seriously injured in December by the influenza, would gradually recover with the decrease of the epidemic. I am sorry to say that this has not been the case. Our retailers have found up to the present moment, no compensation for what they lost during the last month of 1889. I believe that a great many people sent orders, at the last minute to bon bon houses or other places where there is no necessity for any choosing or bargaining, and so deprived our jewelers and silversmiths of their usual profits. Yet this explanation would hardly be sufficient to account for the extreme dulness of trade in our lines.

BOGUS EXPOSITION GOODS.

I have noticed, in various parts of Paris, many large shops well stocked with so-called Oriental, Japanese and Austrian articles, announced as being goods from the Exposition. These dealers inform the public that they have done a splendid business in buying what foreign exhibitors did not care to take back with them ; and, consequently, these goods are supposed to be sold at a very reduced price. Many people have, no doubt, been tempted by these displays, but they soon find out that the articles in question are either of an inferior quality, or so damaged in one way or another, that they ought to be labelled second-hand. Until then, our unscrupulous bazaar keepers will always manage to get new goods, on the same terms, to replace those sold.

WEDDING GIFTS FOR THE MIDDLE CLASS.

Some manufacturers are fairly occupied with wedding orders although this is not the fashionable season for it. Jewelry and silverwares of a quiet but solid appearance are sold to middle-class people, who are almost the only customers to be depended on before Easter. These people are seldom captivated by startling novelties, unless they belong to that class who endeavor to imitate the upper classes ; in which case they never consent to their daughter getting married before April or May. Plain-minded bourgeois, with no pretense to artistic education, however, always choose massive gold bracelets, adorned with a few large stones symmetrically arranged. They are sure to prefer a brooch in the same style to a fierce looking chimera ; and, if they happen to yield to the fascination of diamond insects and birds, the most familiar among those winged creatures are the only ones that can win their fancy. A wealthy merchant who buys a costly rivière does not, as a rule, study the elegance of the pattern. What he wants is to get large stones arranged in such a way as to show the full value. Articles in silver for a middle-class wedding must be very heavy. Before he looks at the decoration of a coffee pot or a sugar basin, the intended bride or bridegroom's parent or relative always asks for something strong. He knows that his present will be valued in proportion to its weight, and, he himself, does not believe in any other criterion.

STRIKING OUT NEW PATHS.

Yet novelties have to be devised for other customers more difficult to please, and as it may be expected, some silversmiths will make a determined move, the result of which must be to bring to the front the Renaissance, the Louis XIV. or the Louis XVI. style, in place of the Louis Quinze one. It seems more and more evident that we cannot, in silverware, devise anything new. We are an old nation, and naturally we act as old people who always look back with pleasure into the past, never noticing in the present anything worthy of their admiration. What is true here is true pretty much everywhere else on the continent, and the same must be said of the old Asiatic countries.

MUSEUMS AN INCUBUS.—NATURE THE TRUE TEACHER.

Although I dare not complain of it, I must confess that our misfortune is due to the enormous quantity of artistic relics, preserved in our museums and collections. To find new inspirations, our silversmiths ought to spend a part of the year in the country like landscape painters, and never dream of historical styles. This is the only way for them to obtain thoroughly fresh ideas. Unhappily, I am afraid that they will not adopt this course.

HELP FROM THE ARCHITECT AND THE SCULPTOR.

Yet something has occurred, lately, which might, after a time, help us to renew our styles in silverware. Architects and sculptors, who



SILVER VASE MADE BY FROMENT-MEURICE.

used to consider themselves as belonging to a superior class, and, for many years, never would consent to acknowledge that fine art had any connection with industrial arts, are beginning to abandon this rediculous notion. They are now sensible enough to understand that, besides the welcome profit which they must derive from creating new models for bronze and silver workers, they will also acquire a greater suppleness of talent. Prominent sculptors, such as Antonin Mercie, Moreau, Vauthier, Coutan, Falgniere, etc., have modelled some remarkable groups for several silversmiths, who were thus enabled to produce elegant surtouts and original prize cups. These true artists always endeavor to copy nature, even when they have to deal with allegories, and their nymphs of the field are real country girls with no statuesque attitudes.

Architects are condescending to make designs for clocks and vases, and although they cannot be expected, as yet, to invent very startling novelties in these lines, models created by them generally bear the mark of a most refined taste. In clocks they have a decided preference for Renaissance patterns, elaborately adorned, and exhibiting a great variety of allegorical figures. A few are made in a dainty ogival style, with transluscent enamels reproducing in a quaint and naive manner scenes of the fourteenth century,

A MASTERPIECE BY SEDILLE.

It would seem that in our country, where artists in the decorative lines are so much inclined to copy old models, it must be utterly impossible to create an original vase. Of all articles, this is by far the one which has been the most exhaustingly handled, from pre-historic times to our own days. Clay, marble, porcelain, bronze, silver, gold, onyx, etc., have been used to make vases, a great many of which are thorough masterpieces. Not to mention Greek and Roman artists, Carravagio, Vico, Della Bella, in Italy; Du Cerceau Lepautre, Cauvet, in France; Solis, Brosamer, Hopfer, in Germany, and many others in England and Holland have devised in that line the most elegant patterns. Some remarkable works of this kind have also been made during the present century. The vase reproduced in our illustration was designed by the well-known architect Sedille, and executed in silver by one of our foremost silversmiths. The escutcheon on the center is adorned with a cameo, engraved by André Allar, representing France protecting Arts. The effect of the ensemble is at once elegant and original, although the shape of the vase and all the circular ornaments are in the Greek style. The arrangement of the laurel stalks, twisted into handles, and the serpent whose head rises with a graceful curve, then bends with a fierce look over the vase, are the only parts in it which touch the idea of novelty, yet this is sufficient to give it the appearance of something unseen.

Fancy mirrors with oxidized silver frames are exhibited in all fashionable show-windows. Some represent an easel, with the glass resting on it. One has the shape of a harpsichord in the Louis XVI. style, with garlands of roses drooping on the sides and wicked little cupids climbing about, etc. Another is overhung with vine leaves and grapes which the world-famed fox is vainly endeavoring to reach before he comes to the well-known conclusion. Then we see a clown standing on a high stool and holding at arm's length a hoop, through which a circus beauty would no doubt hesitate to jump, etc.

JASEUR.



[FROM OUR SPECIAL CORRESPONDENT.]

A VALENTINE FROM THE TWIN CITIES.

MINNEAPOLIS, Minn., Feb. 14, 1890.

It really looks as if business in all lines was beginning to pick up. Good times are always just ahead, but Minneapolis seems closer at their heels than for some time past. Commenting on this, the Warner Jewelry Company says that although just at present the reaction from holiday trade, which was unusually large, is felt, business with them is considerably better than at this time last year. They have all their traveling men on the road, and last year after the holiday trade had subsided, things looked too dull to warrant their sending out their men until the first of March. They say that trade at Christmas was so large with the retailers that their stocks were depleted and they are buying to replenish their stocks again.

The Minneapolis Jewelry Manufacturing Company agree both as to present quietude and promising outlook; so do Reed & Dailey; in fact, "so say we all of us."

Representative retailers, Harry Legg, Eustis Bros., and Hudson, say sales are still brisk, better far than most January trade.

Frank Worrell has bought out Louis Metzger and will continue the business at the same place. Mr. Metzger has entered into partnership with S. Jacobs under the firm name of Jacobs & Metzger.

Henry Hoverson, Kate Sears and E. A. Sears have incorporated as the Warren Company of Minneapolis, with a capital of $10,000. The object of the concern is buying and selling, and importing watches and jewelry.

The sheriff closed the jewelry establishment of Stahl & Martin, of St. Paul, a week ago under an execution.

The third incendiary attempt upon a building in St. Paul resulted, a week ago, in considerable loss to P. F. Egan, the jeweler. He claims it amounted to $10,000, principally the effect of water and smoke. Chief Jackson, of the fire department, however, stated that the damage could not exceed $1,000. Mr. Egan's stock is insured for $13,000.

Jewelers (because of their gifts, probably,) seem always to be popular among the ladies. At the end of January Joseph G. Smith, of Janesville, Minn., the jeweler, was married to Miss Hattie Turner, of the same place. "Tom" Morris, the popular Crookston, Minn, jeweler followed suit the next day at Waupon, where he married Miss Nelly Heath, and "Dave" Goldberg, of Butte, Mont., is now in New York City, expecting to be gone a couple of months, and while there to be married.

Two chattel mortgages are responsible for the closing of George W. Pearsalla's jewelry store at Sioux City, S. Dakota.

The third biennial report of the Iowa bureau of labor statistics has just been issued. Speaking of artisan jewelers, it quotes their average daily earnings at $1.75, yearly earnings, $519.33, and average living, $499.10. One might infer that the general run of Iowa jewelers are not rolling in the lap of luxury.

A rather curious attempted suicide was a recent one at St. Paul, Minn, when a jeweler's clerk, one John Lind, took a dose of the muriatic acid always on hand in jewelry stores for use in soldering. He swallowed three drams, but immediate nausea saved him. The man is still in a precarious condition and will be in danger for a month, this being the time of action of the acid.

F. E. Benjamen, of Mandan, N. Dak., was robbed of $500 worth of jewelry lately. It seems the store was left alone for about twenty minutes, and although people were passing and re-passing nothing unusual was noticed. There is no clue to the gentry. Nelson's jewelry store at Wausau, Wis., was lately burglarized of $600 worth of watches and rings under the same conditions.

Cook & Hawley, of Lanesboro, Minn, have closed out their jewelry business, the oldest one there. G. B. Ellestad, of Mabel, has purchased the stock.

Mr. Paul Hohlfeldt, the jeweler, of Escanaba, Mich., with Anton Odill, of Norway, and other gentlemen, is exploring for iron ore this winter in the neighborhood of Iron River.

E. W. Parker, of La Crosse, Wis., has gone to Plant City, Fla., to open a jewelry store.

M. C. Engesser will open a jewelry store at St. Peter, Minn., the 15th of this month.

George W. Frost, the jeweler, who has been doing business in Sioux Falls, S. Dak., since last May, has left for Maine. He says he has not soured on Dakota, but has had greater inducements offered him in the East.

J. P. Hedenstad expects to open a jewelry store shortly in New Richland, Minn.

Parker, Minn., is to have a first-class watchmaker and jeweler. A. M. Frazie, of Osage, Iowa, will locate there.

N. A. Clausen, a Duluth, Minn., jeweler, is about to remove his business to Tacoma, Wash. Ter.

HENDERSON.

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Mechanical Ocular Defects.

Their Nature, Cause, Correction and Relations to Functional Nervous Diseases.

Edited by C A. Bucklin, A. M., M. D., New York.

[The aim of the author is to produce a clear and thoroughly practical course of instruction on the subject of "mechanical ocular defects," which is entirely void of useless technicalities and within the easy comprehension of every thinking student without his having had any previous technical or mathematical education.]

MYOPIA.



MYOPIA EXISTS when the retina is located behind the focus of the dioptric system, the eye being in a state of perfect rest. How the retina becomes thus located has been accounted for in a variety of ways. It has been claimed that the cornea has a more sharply curved spherical surface in myopic individuals than in those individuals who are not myopic. Again, it has been claimed that the lens has in myopic persons sharper spherical curved surfaces than that of the emmetropic eye, while the latest and most generally accepted cause of myopia depends simply upon an increase in the diameter of the globe by means of its being stretched.

While in certain cases a diseased condition of the cornea allows it to bulge or become conical, thus producing corneal conditions sufficiently active to produce myopia, still careful investigation of the curves of the normal cornea with the ophthalmometer fail to demonstrate that the cornea is more sharply curved in myopia than in emmetropia.

It is also true that the lens under certain pathological conditions also accounts for myopia; this is demonstrated by the peculiarity which appears during the development of cataract, called "second sight." The lens during its stage of swelling frequently becomes so strong that the individual who formerly wore convex fourteen lenses to read with can dispense with them for reading, and may even require concave lenses for distant vision. With the above mentioned exceptions, the universal cause of the myopia appears to be a stretching of the eye-ball

It has been stated that the myopia is in many cases directly inherited. I cannot reject this statement about those *exceptional* cases where myopia of ½ is found during the second or third year of life, but, as a rule, the tendencies which lead to the development of myopia are inherited and not the defect direct. In hyperopia the entire defect is directly inherited, and the hyperopia is as great at birth as at any subsequent date till the age of forty-five. In myopia the conditions are quite different—the child inherits a soft condition of the coatings of the eye. This is also disputed by some, who claim that any young eye from injurious influences may become myopic. The inherited soft condition of the eye is, however, the only explanation which will stand the light of investigation for a single minute. If you observe a myopic child it is safe to conclude that it has a myopic parent or grandparent. I made this remark to an old optician several years ago who brought his daughter to me to be examined. He told me that he had fitted glasses for his wife, her parents and his parents, and had also fitted himself with glasses. He assured me that no person in the family but the daughter was myopic. I turned to him and requested him to read the distant letters his daughter was having so much trouble to read. It was demonstrated in a moment that he was more myopic than the daughter he had brought to me; thus it will be seen that the opinions of parents who contradict the statement that myopia has been inherited must be taken with due allowance.

I give as an example a family reported by Mauthner. Father and mother had myopia of ½. Of thirteen children, nine females and four males, there are nine (six females and three males) who are myopic in both eyes. One female is myopic in one eye and emmetropic in the other. There are only three (two females and one male) who are emmetropic in both eyes, and they have unusually acute vision. Many similar examples could be given from my personal experience, but one is sufficient to illustrate the point.

The inheritance of myopia has very many peculiar things about it; for example, an emmetropic daughter of a myopic family marries an emmetropic man. From the marriage there were four children, three of whom were myopic, two developing myopia of a very high degree. It also sometimes happens that all of one sex in a family inherit myopia. In families where both parents are myopic the myopia of the children is greater than the highest degree on either side, and the degree of myopia is frequently equal to or greater than the combined myopia of both parents. Exceptions, however, of emmetropic children under these conditions are occasionally observed. When one parent is emmetropic and the other myopic, the degree of myopia developed in the children is likely to be less.

The results of marriages between myopic and hyperopic persons upon the eyes of the resulting children has been left entirely in the dark. I cannot find any literature or material from which to form an opinion. I hope that some of my readers will in time furnish me with the facts showing the effects opon the eyes of children, the parents of whom are on the one side highly hyperopic and on the other highly myopic.

I think from the above my readers will feel convinced that the influences which determine that an individual will become myopic are inherited influences.

Our correspondence requiring answers is so extensive, that we will leave the subject of myopia at this point and consider the further factors in its etiology in our next issue.

CORRESPONDENCE.

To the Editor of the Jewelers' Circular:

I have a difficulty with my eyes which gives me a great deal of annoyance, and I would like you to tell me what the trouble is with them.

I have read your articles in The Jewelers' Circular, and "Detection and Correction of Visual Imperfection" with a great deal of interest, but can find nothing that gives me any insight into it unless it be muscular asthenopia. I have quite a high degree of myopia; wear No. 6 glasses. The difficulty that annoys me is I see double. That is, the object that is between myself and the object I am looking at. For example, I look at a pole 10 rods distant and and there is another pole 5 rods distant in, or nearly in line with the farther one. I can see the nearer one dimly double. I close my right eye and the one at the left disappears. I close the left eye, the right one disappears. Is same with or without glasses on. I cannot read long at a time by lamp light. The letters after a time all run together and my eyes pain me. By closing one eye the other does not pain me and I can read.

I am a watch repairer and sometimes wear my glasses while at work, but nearly always take them off while at very close work.

What can I do to help my eyes? Do you think it injurious to work at my trade? "DOUBLE."

Answer 1.—The above described individual has slight divergent strabismus as a result of his high degree of myopia. Divergent strabismus in highly myopic persons with double vision is a common difficulty. Double vision during distant vision can only exist as a result of strabismus.

Strabismus as the result of a paralyzed ocular muscle or as a result of high degrees of myopia, is the only form of strabismus in which double vision exists. The internal recti muscles must be the weak ones, because when he closes the *right* eye the left image disappears, and when he closes the *left* eye the right image disappears.

The above statement demonstrates the existence of crossed diplopia, and this defect can only exist as a result of defective internal recti muscles. At the reading distance he has the annoyance in that exaggerated degree which is experienced in muscular asthenopia resulting from high degrees of myopia.

Any occupation which will pay as well which does not require fine work at a close distance is better for eyes of this description than watch repairing.

If muscular asthenopia for the working distance was the only difficulty complained of, the means of relieving the diffculty would be very simple. Diplopia existing during distant vision complicates this very much.

The optical means at our command for the relief of such a difficulty are as follows: Remove the point of fixation for the working distance to the most comfortable distance by weak concave lenses. Correct the remaining difficulties of fixation by the use of prisms base in. Owing to the extensive failure of the internal muscles to perform their usual functions, as is indicated by the existence of diverging strabismus during distant vision, it is highly probable that the prisms required would be very strong and would consequently produce annoying symptoms. Simple tenotomy of the external recti muscles which would cause the double vision to disappear, would probably place the person in such a condition that satisfactory glasses could be obtained.

Myopic persons who have annoying symptoms at the working distance furnish the most difficult class of cases which the optician has to deal with.

To the Editor of the Jewelers' Circular:

Will you please advise me on the following case: A girl, age between 6 and 7, is cross-eyed; when the straight eye is covered the crossed eye becomes straight

D. vision R. eye = $\frac{20}{30}$ full
" " L. (crossed) $\frac{15}{200}$

accepts up to + $\frac{1}{24}$ with which she sees about as well as without glasses; any higher number makes vision poorer, as near as I can get to it from her statement. What do you think are the chances of her eyes becoming straight by the use of glasses? Her condition has been as at present for three years. F. L.

Answer 2.—I should strongly suspect that the child had hyperopia amounting to $\frac{1}{12}$, of which only $\frac{1}{24}$ is manifest, and the balance is probably latent. For the correction of cross-eyes by convex lenses the entire amount of hyperopia must be corrected. This can only be determined by the use of the ophthalmoscope in the hands of an expert person when the acuteness of vision is not sharp. The entire amount of the hyperopia may also be determined when acuteness of vision is good by throughly paralyzing the accommodation, by dropping a solution of atropia containing two grains to the half ounce of water into the straight eye three times daily for two or three days, after which the strongest convex lens which does not make distant vision less distinct represents the entire amount of hyperopia. We then place the same number of convex lens before each eye. This is the method when one eye is always the fixing eye and the other always the squinting eye. In alternating squint where they fix first with one eye and then with the other, each eye should be tested separately.

To the Editor of the Jewelers' Circular:

Will you kindly answer the following queries briefly, either by enclosed letter or through the columns of THE CIRCULAR, of which I am an interested reader.

We have a patient, age 46, clergyman, who has one eye which he has never used. His vision in the other eye is good. Has never used glasses until lately, when we fitted him with a pair which he uses at home. Objects to wearing glasses constantly.

Vision is as follows:

Right eye, D. V. $\frac{20}{20}$
Left " " $\frac{20}{200}$ and barely that.
Left eye with + 60 s. ⊃ — 9 c. ax. 150° = $\frac{15}{30}$

and can see to read ordinary print with a little difficulty.

The pin hole test shows the retina to be capable of receiving a distinct impression, and the radiating lines, etc., prove the astigmatism accurately corrected with cylinder given.

Right eye accepts + 60 s. for reading, and we prescribed some weeks since for right + 60 s., and the combination given above for left eye.

The questions we desire to ask are these:

I. Ought our patient to wear glasses constantly, with a plain glass or + 144 over right eye and best obtainable combination for D. V. on left eye?
II. What will be the probable result if he persists in neglecting the left eye?
III. Can he reasonably expect the right eye to continue to do the work of both eyes when presbyopia becomes more advanced.

If you can briefly reply to these queries you will greatly oblige.

I fitted these glasses as a matter of experiment, having recently purchased a test case from Spencer Optical Co., and having been a reader of your articles in THE CIRCULAR.

I am pleased to note that the patient has a growing sense of vision in the bad eye, and think I can fit him with two pairs of glasses which will bring the visual acuteness in that eye up to a practical working point. He objects to a continual use of glasses which I advise. N. T. W.

Answer 3.—Question I. This can only be answered by direct experiment on the patient. What is agreeable to one person under these conditions is very disagreeable to another. The majority of persons having one perfect eye cannot be induced to wear such a correction before the defective eye; exceptional cases experience comfort from a correction of the defective eye.

Question II. Such persons having binocular vision seldom if ever experience any progressive reduction in tne acuteness of vision, because of the bad vision occasioned by the error of refraction.

Question III. It is reasonable to suppose that the right eye will always do the work for both eyes, although presbyopia becomes well advanced. These patients usually object to the constant use of glasses because they see comfortably without them.

The patient above described has always done his work with one eye, and I doubt, notwithstanding it would theoretically be better for him to use both eyes, whether he can ever be induced to use them.

The School of Optics has in the February class the following students: Elmer R. Bumps, Thomaston, Me.; Wm. R. Springer, not located; Ernest H. Holter, Oberlin, O.; Frederick A. Jones, Newark, N. J.; Edward R. Mason, Binghampton, N. Y.; Isaac W. Haight, Auburn, N. Y. A class will form about March 14. Those desiring a place will please apply early



FIG. 1. 5-6 SIZE.



FIG. 2.



FIG. 3.



FIG. 4.



FIG. 5.



FIG. 6.

PARISIAN NOVELTIES.

Our fig. 1 represents a neat and elegant necklace, whose pattern is calculated to make also a pretty diadem. We have here something light and graceful. The design is clear, although entirely out of the common.

Fig 2 shows an elaborate bracelet in chased gold and enamel on a pierced background. The flowers might be made of a gathering of colored stones. This pattern has been very much admired at some of the best shop windows in Paris.

Fig. 3 is the copy of a seal in the Louis XVI. style. The dolphins, whose tails are so gracefully entwined, are made either of chased gold, with tinges of a fading green on the scales, or of assembled brilliants, with rubies for the eyes.

Figs. 4, 5 and 6 are reproductions of brooches made of enameled gold, brilliants and pearls. Those floral arrangements, which might be endlessly varied, are very much worn at present.

Fashions in Jewelry

A Lady's Rambles Among the Jewelers.

I HAVE had the good fortune to see in advance the French fashions in diamond jewelry for the approaching season. The inference from these is that the diamond crop is unusually thrifty. Nothing could be more lavish than the way in which diamonds are used, not as gems, but as the goundwork for decoration, no more metal being used than is absolutely necessary as a framework for the stones.

*** *** ***

DIAMOND necklaces are in great vogue ; necklaces of all kinds are now enjoying great favor, Renaissance designs, and the lighter graceful forms of the Louis XVI. period being most admirable. This last is distinguished by ribbons and garlands. One necklace in particular is worth detailed description. The circlet is a narrow twisted ribbon made of gems set within tiny rims of gold. At one side it is apparently tied in a number of loops with short ends forming a sort of rosette. A new and equi-distant point marked down by a knot on the other side starts a garland of large pearls which hangs in festoons. Immediately in front it twists with a pendant, then is draped to the rosette, from the center of which it drops in two floating ends terminated in large pear-shaped pearls.

*** *** ***

ANOTHER necklace expands into bracelet forms, of which the framework is marked by graduated stones, and within these are lighter, graceful interlacings. Conspicuous in all the more conventional diamond jewelry are these graded stones, which accent in the happiest manner the principal forms and give character to the design.

*** *** ***

TIARAS follow the designs of necklaces, that is to say the continuous flowing forms which make Renaissance styles prevail. Some are as fine and filmy as the lace works of Jack Frost.

*** *** ***

CORSAGE ornaments of diamonds are floral and are made to fasten on one shoulder and to trail over the bodice and down to the waist. These ornaments are detachable and can be unlinked so as to form a number of sprays and forms to be disposed in other parts of the toilet and in the hair. The wild rose is still the favorite model although one of the most artistic designs consists of poppies and wheat. The drawing of these was beautiful, the turn of the leaves, the twisted stem and drooping bud of the poppy being copied to the life.

*** *** ***

INSECTS are introduced in many of the corsage ornaments. The bee is, of course, a favorite, being copied in diamonds and rubies. In one, a long spray of wild roses, imitated solidly in diamonds, there are at least a half-dozen bees. These do not rest on the flower but make part of the composition, and can each be separated and be used as a single ornament whenever desired.

*** *** ***

RIBBON knots made of diamonds form graceful ornaments of all sorts. Lace pins are rarely seen, but in this form are pretty enough to bring back the fashion.

*** *** ***

A NEW fashion in all sorts of jewelry is to give the effect of a pin passing through the material. This is done by a concealed hinge and pin. For example, a chatelaine on which is suspended a vinaigrette has a diamond sword as a belt pin. The diamonds are found in the hilt and in the end of the pin, and the concealed pin pierces the stuff. The effect is that of the entire diamond-shaped blade passing through the gown. Diamond hair pins are constructed on the same principle instead of having all the ornaments lavished on the top. The effect is one of careless oppulence and is exceedingly pretty.

*** *** ***

DIAMOND ear ornaments are constructed on the same principle. A novelty is a bird's claw which appears to clutch the lobe of the ear. It holds a large diamond just over the pierced hole and the diamond is met by a slender wire from the back through the lobe which fastens it. Another ear ornament is a network of diamonds covering the lobe of the ear and is fastened in the same manner.

*** *** ***

HERE are two new forms of Queen chains. One is a series of flexible links which, when pendant, I can only compare to a thermometer without the case. At the end swings a jewelled bell. Another is a chain of diamonds and from the end swings a little harlequin in yellow enamel.

*** *** ***

THE æsthetic stork in diamonds with bronzed legs comes in graduated sizes to supersede the swallow flights with which women adorn their breasts.

*** *** ***

A GENTLEMAN'S scarf pin is a diamond dove holding an enameled hat.

*** *** ***

WRITING of diamond bows, an entire necklace is made of diamond bows with ends, each bow being at least two inches across and just touching one another.

*** *** ***

A LOVELY necklace for a young girl is made of three rows of small pearls in sections and connected by upright bars set in emeralds.

*** *** ***

AN ODD but attractive bracelet is made of pale sapphires cut in bud-like forms and suspended between two triangular forms inlaid with diamonds, and intended as conventionalized leaves. These overlap one another, the sapphires being held in perfect relief. The effect is very novel but it seems it might prove annoying by catching in lace or fringe of the toilet.

*** *** ***

SENTIMENT is particulary active in jewelry, and it seems to have been caught from our English cousins who have always shown a penchant for jeweled hearts and darts, and loves and doves. Heart-shaped jewelry is found everywhere. Pendants and brooches more often than not are heart-shaped, and no expense is too great to lavish on them. Moonstones and turquoise, heart-shaped and surrounded by diamonds, seem to be the favorite stones. Two necklaces were made entire by turquoise and moonstone hearts set round

with diamonds. The shape prevails from the most expensive stones and settings down to baby pins of gold wire.

*** *** ***

A RICH bracelet of woven gold, deep-toned and lusterless, looks like an antique with various tinted beryls and topazes set deep in the gold meshes.

*** *** ***

CHATELAINES seem to be coming into form. For an elderly woman a chatelaine and watch is made from cameos of different sizes. These are set in filigreed gold. The watch itself is encased in cameo. Another chatelaine is made of beryls in three different sizes and also set in filigreed gold. This would be particularly effective with appropriate costumes. A third chatelaine is of the palest pink-tinted quartz in which diamonds are set, and the cover of the tiny watch on the outer side is of quartz, with a design in diamonds. This combination is of exquisite beauty and delicacy. As for diamond chatelaines in intricate forms, these are almost common.

*** *** ***

ALTHOUGH watch fobs are not a prevailing fashion, there is still demand enough to produce some very fine things of the kind.

*** *** ***

GOLD thimbles have bands of repousse work in which are buried tiny diamonds, rubies and sapphires. They are very pretty, but I fear could never be made serviceable by the lady who sang the song of the shirt, even if she could have afforded one.

*** *** ***

ARTISTIC jewelry is among the most attractive things shown. As Turner once said of his palette, it is mixed with brains. Such a piece was a pansy made of yellow topaz of which each petal was defined by diamonds with a diamond center. Another piece, a pendant, was a mask, a Renaissance design, the grotesque features portrayed decoratively but not realistically in enamel and the rest of the form, such as one sees in the architecture of the period, finished in diamonds. This transference of arts so diverse as architecture and jewelry was novel and successful.

*** *** ***

RINGS are either very long and formed of a row of colored stones surrounded by diamonds, or are circlets or double circlets.

*** *** ***

ROSETTE settings are pretty and quaint. A moonstone brooch for example is surrounded by tiny rosettes made of diamonds and sapphires; in one the diamond makes the center and in the other the sapphire, thus alternating around the center.

*** *** ***

BOTH men and women wear the spiral Quaker-like rings, and interlaced knots in which are sunk diamonds and colored stones.

*** *** ***

A SCARF pin made of a pearl as large as a filbert is held in place by broken wreaths of diamonds.

*** *** ***

A LITTLE gold watch has on the cover a skye dog in enamel sitting by a picture on an easel. The picture is a landscape, and is framed in tiny diamonds.

*** *** ***

BON-BON boxes of repousse gold are powdered with diamonds. Famous beauties set in the covers and surrounded by circlets of pearls and diamonds are the most elegant. These bon-bon boxes are not merely ornamental. Cachous and perfumed pink, lilac, blue and yellow confections are carried by almost all men and women of social pretensions, and if they do not possess boxes for show, use plain druggists' bottles.

*** *** ***

PUNGENTS as they are called in the trade have a like reputation in the world of fashion. Those long, cut glass bottles, that might be as serviceable as an Irishman's shilalagh in an emergency, have given way to dainty trifles that are works of art. A chaste sample is a colorless cylindrical bottle girdled at the stopper with three closely set rows of diamonds. Long Egyptian-like gold bottles with decoration in enamel are seen. These swing from a ring which is to be worn over the glove.

*** *** ***

LIMOGES enamel of the finest description appears in watches and chatelaines.

*** *** ***

A BRACELET for a bud, by which name sweet sixteen is known, is a circlet set around with tiny diamonds alternating with dots of pink coral.

*** *** ***

FOR rings are long serpent-like cases mounted in snake skin.

*** *** ***

A QUEEN chain of tiny twisted links of gold and silver alternating terminates in a little dead gold bag speckled with tiny rubies.

*** *** ***

TREMENDOUS turquoises are still the heart's desire of every woman of fashion. This is a borrowed fad since Mrs. Mackay presented the Duchess of Fife with a tremendous precious egg. At some amateur theatricals recently the leading lady had one finger almost hidden beneath a turquoise surrounded by diamonds, and on her breast she wore another and larger turquoise.

*** *** ***

SLEEVE buttons of turquoise set in with carbuncles are a striking combination in favor.

*** *** ***

ENAMELING on silver, or rather silver gilt enameled, is engaging a great deal of attention. The particular direction it takes is in table utensils, the decoration being Moorish, as are also the forms. There are coffee services for example, tall graceful urns of silver gilt with primitive reds, blues and green enameled designs. These services are most elaborately set forth. The ewer stands on a round platter richly enameled. The sugar pot and creamer are in keeping. Occasionally cups and saucers of Vienna ware accompany them, and sometimes these also are of silver gilt and enameled. All are finely enshrined in boxes of lustrous make upholstered in satin.

*** *** ***

FANCY dishes, compotiers, card receivers, appear in Moorish forms with Moorish decoration in enamel, and the greatest array and variety of spoons of curious forms of similar styles. The bon-bon spoons are particularly pretty of this kind.

*** *** ***

A SET of spoons in dull lusterless silver has handles, each of which simulates the stem and blossom of some flower.

*** *** ***

LILLIES of the valley seem to be a popular model for the handles of spoons. The shape of the leaf is copied in the form, and on this is the stock of the flower in relief which makes the decoration.

A SILVER salad bowl is oval and incrusted with oyster, clam, scollop and other shells. These are admirably represented in color.

*** *** ***

SILVER baskets with floral decorations in gilt relief assume rustic forms and handles.

*** *** ***

WRITING pads are made elegant by silver corners in open work which overlap and hold the paper in place.

*** *** ***

THE latest place for watches is in one corner of a leather card case.

*** *** ***

SILVER salad spoons are notched at the ends in order to entrap the seductive olive and the brilliant beet. These come in sets in cases.

*** *** ***

FRUIT knives of silver gilt have porcelain handles. Often these are curved to fit into the hand and when white have gold decoration in relief.

*** *** ***

THE Dresden fruit knives, of which there were a number, were greatly sought after at the Barlow sale.

*** *** ***

AN EXQUISITE little set of liqueur glasses consists of holders of perforated silver in which are set tiny tumblers ornamented with chasing.

*** *** ***

BEER mugs made to accompany glass tankards with silver tops are made like soda water glasses, with holders of perforated silver.

*** *** ***

NEWLY introduced in the jewelers menagerie are rabbits in white enamel.

*** *** ***

AN ARTISTIC diamond necklace is composed of large stones connected by small silver bars elegantly chased in renaissance designs.

*** *** ***

A NECKLACE of gold beads has each bead faceted, a neat finish, and in one plane in each bead a diamond is sunk; other necklaces introduce stones of different colors.

*** *** ***

A BRACELET of flexible woven gold has for its clasp a tassel of gold with long ends, and each tipped with a pearl.

*** *** ***

AS MEN'S scarfs are worn larger, scarf pins are also larger. One favorite pin is the lustrous moonstone ball held in a claw.

*** *** ***

THE FROG is the favorite animal in fancy jewelry, although the lizard has many friends.

Bric-a-Brac, Ceramics and Decorated Novelties.

THE Barlow sale of porcelains, glass, old silver and old furniture has given an impetus to such purchases. Porcelains and old silver are particularly desired, and the hint is taken in the production of new prices of this kind by copying and repeating these forms and decoration.

*** *** ***

OLD Dresden porcelain is imitated successfully. Such a piece is a clock shaped like a graceful curved gallery and wreathed in flowers mounted on a pedestal lashed by greenish wares.

*** *** ***

CANDELABRA of porcelain, tree-shaped, with shepherds and shepherdesses philandering at the base, are the favorite models.

*** *** ***

DRESDEN statuettes are pretty trifles for wedding presents. Small figures of French bisque are also desirable. They belong in white and gold rooms from which most objects of art, except of appropriate character, are excluded.

*** *** ***

GRACEFUL glass-enclosed cabinets are now sought after, and antiques are preferred. Chippendale and Louis XVI. brass mounted, and often ornamented in vernis-Martin are preferred. Beuhl and ormolu of earlier and more florid French styles are also desired, as well as old Dutch tulip wood cabinet with floral inlaid ornament. Into these cabinets are gathered the quaint old silver, jade cups, historic snuff boxes, carved ivories, bits of old Limoges enamel and rock crystal ornaments are gathered which everybody is now collecting.

*** *** ***

IN VIEW of the country house and villa season, the town is full of large colored faience jars and pots that are so valuable in furnishing in the country for piazzas and halls. Yellow and greenish blue are the favorite colors—But a novelty appears this season in large bowl shaped pots, blue and white, and imitated from the Japanese. For out of doors there are faience pedestals spiral shaped in flash colors such as are seen in oriental porcelains. On these are mounted large jars of similar color. Other pedestals have Renaissance decoration in relief, as white on green with bowl-like jars to match. Yellows are particularly good and are often tub-shaped. These are resplendent in the country, filled with masses of yellow lillies, Maximilian daisies, yellow hollyhocks, or daffodils. The secret of color decoration is in keeping the colors massed. Parti-colored bouquets are not effective. The flowers, however, may contrast in color with the jar, but they are better of one kind and tint. Great bunches of pink roses are admirable in turquoise blue jars.

*** *** ***

SHADES for candles are often merely a spray of flowers, or a rose branch. A pretty fashion is to stick roses, pinks or some simple posy in the candlestick at the base of the candle. The flower is usually the same which is found in the shade, or repeats the tint of the shade. A pretty instance was a glass candlestick with a green silk shade, and around the candle was white clover and leaves. Glass candlesticks touched with gilt are exceedingly pretty. China candlesticks in dark blue antique styles are used on the table, but these seem scarcely so suitable as the graceful French and German styles.

*** *** ***

A MAGNIFICENT card receiver comes from the other side. It is a large shallow blue and white bowl mounted in ebony and on an ebony stand.

*** *** ***

GARDEN seats of earthenware are made to resemble packages tied with ropes. These have not altogether superseded the earthenware kegs which have long been used as garden seats.

*** *** ***

OLD Worcester platters scattered over with large bouquets in vivid colors attract the novelty seekers.

*** *** ***

GLASS flasks are covered with perforated silver in large vine-like forms showing the glass beneath. ELSIE BEE.

WATCH AND CLOCK ESCAPEMENTS.*

By Dudley W. Bradley.

(*Commenced in the February, 1890, Number.*)

WHAT is termed the pin escapement (fig. 5) was invented about the time Graham effected his great improvement. In this escapement a row of semi-circular pins was placed on the face of a wheel, and operated upon two pallets placed in opposition to each other with space between them just sufficient to allow a tooth to pass through. An escaping tooth from the first pallet fell upon the repose of the second pallet, passed between the two, down the impulse angle, and escaped, the next tooth following on the repose of the first pallet.

This device was in reality the Graham pallets in another form;

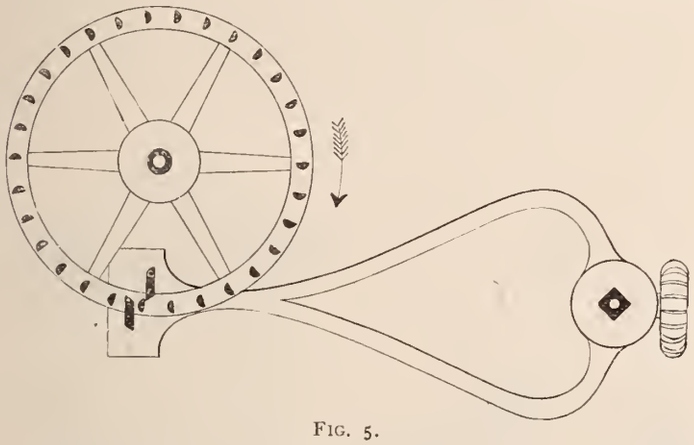


Fig. 5.

but for tower clocks it possesses several advantages over the distinct Graham escapement, to wit: it does not require near the delicacy of adjustment, the wear of the parts does not disturb the relations of the scapewheel and pallets, as it does in the other, and it allows of a large arc of vibration without banking on the wheel. The pin escapement is in use in many of our large tower clocks, and I think gives more universal satisfaction than any other, particularly for short pendulums.

We might suppose that horologists would have been content with the success thus attained, but this only spurred them on toward the goal of their ambition, which was to perfect an escapement in which the impulse given to the pendulum would be the same under all conditions. The path seemed to lead by the way of the remontoir (fig. 6), or re-winder. I do not mean to convey the idea that no thought had previously been turned in this direction, for it is well known that some of the foremost minds in the horological world had long sought this end, but during the period which saw the birth of the Graham and pin escapements, such progress had been made that the solution of the problem of perfect timekeeping seemed to be within the grasp of every horologist. As early as the year 1600 a clock was made in Germany in which the striking of the quarters wound up the going part every fifteen minutes. Christian Huyghens, however, was the first to commit his thoughts on this subject to paper. He says: "I attach to the crown wheel, by means of a well-finished cord, a small weight which alone moves the wheel; the rest of the clock is employed in re-winding this weight to the same height at each vibration," and adds that "this arrangement produces a much more constant force in the machine."

Remontoirs were made in endless variety, but the power was transmitted in but three ways, viz.: by a weight attached to a cord or placed on the end of a lever, or by springs, or by gravity arms. Of the great variety I need describe but a few to give a comprehensive idea of the principles upon which they act.

One that was very pleasing in theory, and that has been re-invented more often, perhaps, than any other, was that of the last wheel of the train running loose on the scapewheel staff, or on a stud directly behind it. The connection between this and the scapewheel was made by a very delicate spring. By means of a pinion and fly and an interlocking apparatus, this spring was wound from two to four times during a minute. This remontoir worked fairly well in practice, and clocks built on the plan ran nearly as correctly as they did without the re-winding. None of the irregularities of the train could be transmitted to the scapewheel, but the tension of the spring varied with the temperature and so made this last stage worse than the first. One of its worst features was, that if allowed to run down no one but an expert could wind it up again. One of the most difficult things to obtain is an 8-day lever movement that will keep good time. Some years since, in thinking over this fact, I recollected the plan of re-winding I have described, and applied it to a clock. It ran fairly, in fact it could have run no worse; but one day I let the clock run down, and I at once discovered that an ordinary person

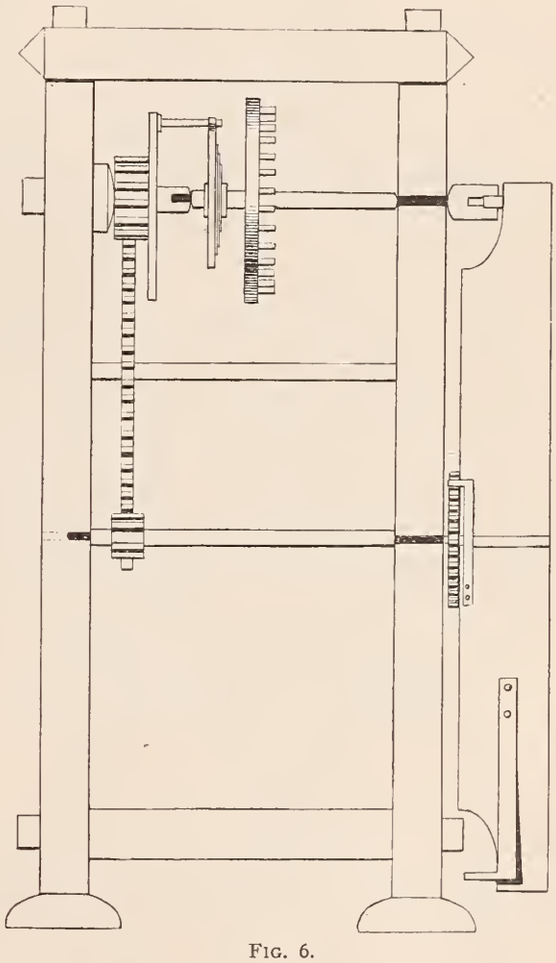


Fig. 6.

would have been compelled to send it to an expert for re-winding. I could have put on an attachment to catch the balance after a certain number of turns of the main wheel, but such complications lead to trouble and expense.

We have here a remontoir made by the Astronomer Royal of England (fig. 7). The front scapewheel and pallets are the same as in the Graham escapement, and operate in the same way, but behind them and connected to them by a fine spring are another scapewheel and pallets without any impulse. Both sets of pallets are fixed

* Copyright by Jewelers' Circular Pub. Co., 1890.

rigidly on the same arbor and move together. We will suppose the pendulum to be moving to the right. The back wheel is released first and makes a run of one tooth, thus arming the maintainer that

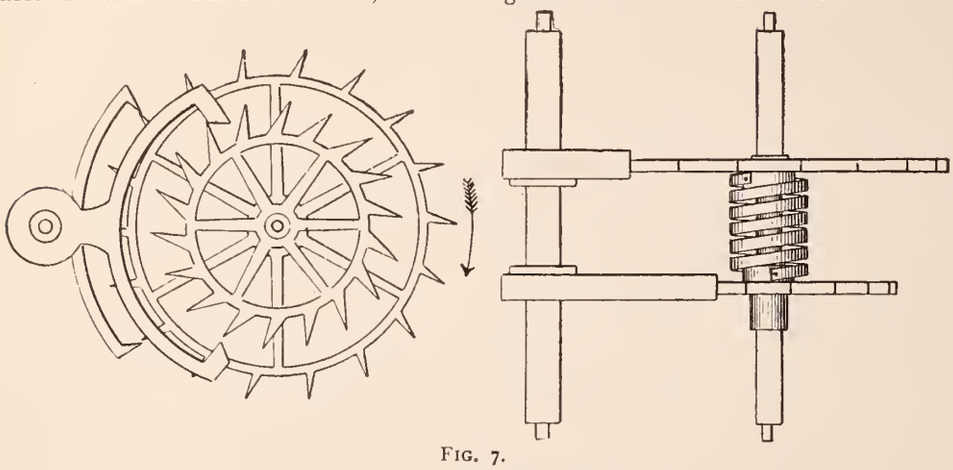


Fig. 7.

distance. By this time, the front scapewheel tooth reaches the angle of impulse, and using the power transmitted to it by the back wheel, gives the pendulum an impulse in that direction. As the pendulum returns, the same operation takes place, giving an impulse in the opposite direction.

Another worthy of notice was that made by Mudge (fig. 8), for which the British Government paid him £3,000. I have copied it to show what a mass of complicating details can be put together. In the first place, it has four hairsprings, two for operating the balance, and two for giving the impulses. Two arms operated by the scapewheel re-wind the springs alternately and the balance unlocks and receives the discharge at each vibration. The balance has two pivots, while the two maintainers each has two, making six pivots in all. The balance was limited in its vibrations to less than 300°, and its time-keeping was not as good as the simple detached escapement. The mechanism of this (the Mudge escapement) was so delicate in construction and so fine in finish, that it has been preserved and is to-day held up as a model for emulation.

Perhaps the first gravity escapement that attracted more than ordinary attention was the invention of Mudge. By reference to the drawing (fig. 9) it will be seen that the right gravity arm is pushed back and locked by the scapewheel tooth resting on a nib at the end of the pallet. As the pendulum

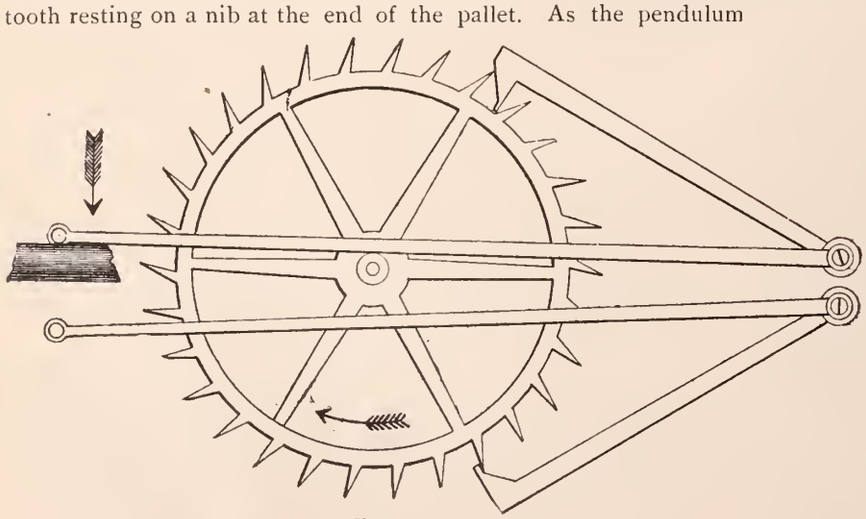


Fig. 9.

springs to the right when near the end of its vibration, it strikes this arm and lifts it far enough for the tooth to escape. The wheel takes a short run and a tooth on the opposite side lifts the left arm and locks on the nib of the left pallet. On the returning vibration of the pendulum, the gravity arm follows it down until it rests on the scapewheel between the teeth. The pendulum keeps on to the left until it meets that gravity arm, releases the tooth held by its nib, when the run of the wheel instantly lifts and locks the right arm. The weight of the gravity arms together with the distance they fall from the contact of the pendulum to their rest on the wheel is the sum of their impulse, which must be a fixed quantity.

This escapement had two objections—1st: It was liable to trip, that is, to throw up the arm with such force that the tooth escaped over the nib and failed to lock. 2d: Approximate tripping or throwing up the arm beyond its proper resting place and holding it there, thus giving off a fraction more of power than the normal quantity. The French made a remontoir on precisely the same plan, but instead of using the weight of the arms to get the impulse, they connected the arms at the top by a delicate spring and depended upon their spring for their impulse instead of the gravity. The transmitting power by springs for moving a pendulum has never been a success.

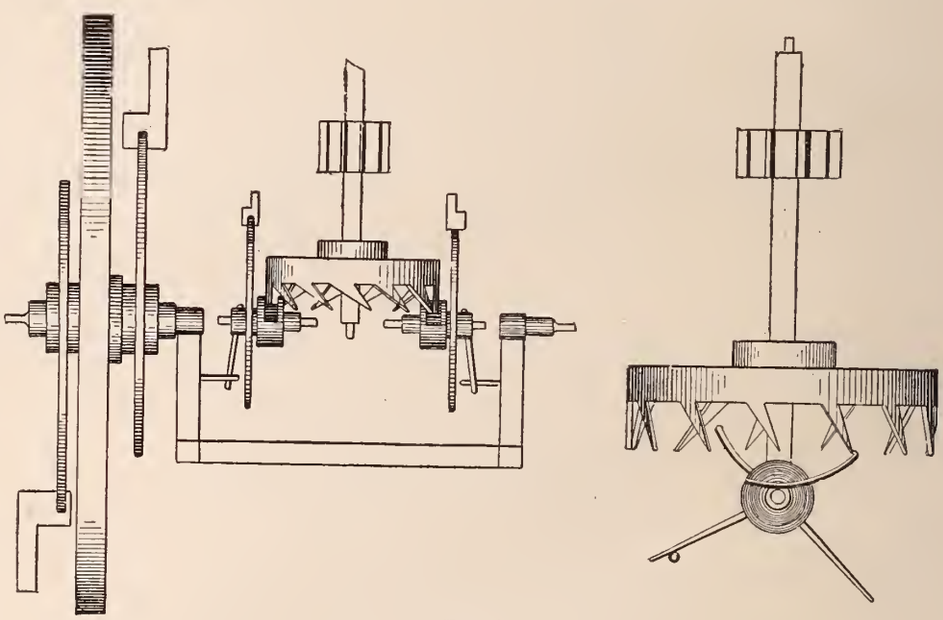


Fig. 8.

(*To be Continued.*)

Permanent Exposition.

Leipzig, Germany, intends to organize a permanent trade exposition to be opened March 1, 1890. The resolution was recently passed by a general meeting of the Polytechnical Society. The Exposition is not to be on a large scale, as it is the universal experience that in such cases the works of a single individual are overlooked; the point to be observed rather is that the individual exhibiter shall have as much space as he requires, without great cost and circumstance. Different workshops are to be opened, in which, though, no work will be performed, all the latest machinery, tools and other auxiliaries will be visible in them. Every kind of trade production will be admitted, an exception being made of heavy machinery, which however may be represented by models. The director of the Polytechnische Gesellschaft of Leipzig invites artisans and tradesmen to participate.

CLOCK DECORATION.

A BRIEF REVIEW OF THE ARTISTIC FEATURES OF CLOCKS FROM THEIR EARLIEST INTRODUCTION.

By Paul Tonnellier.

(*Commenced in the February Number.*)

PART II.

POST-RENAISSANCE PERIOD.

THE monumental clock of Oronce Fineé, mentioned last month, is well worthy of more detailed description. A pentahedron in shape (as shown in fig. 8), it is three feet high, and rests on a pedestal of the same height, adorned with five lion heads in carved wood partly gilt, terminating below in legs of a bold outline. The five faces of the case, whose diameter is 17 inches, are in ormolu, and they are separated by Corinthian columns above which rises a little dome, sheltering the striking works. On the top there is a sphere in ormolu, seven inches in diameter, on which are engraved the 48 constellations of the firmament. It moved from Orient to Occident, accomplishing its revolution in 24 hours. Our illustration reproduces that given in Pierre Dubois' *Histoire de l'Horlogerie*, which was done under the direction of F. Séré, Paul Lacroix's valuable co-laborer in the *Arts du Moyen age et à la Renaissance*. The unfinished appearance of the top, as seen in the illustration, leads us to believe that the sphere must have been under repair when Séré reproduced the clock. This is why we see, instead of the globe, only a loose iron band to fasten it. Each one of the five faces shows two dials, and the *ensemble* is supposed to give all the astronomical indications which, in the state of science at that time, could be obtained with an horological instrument. Yet, Pierre Dubois thinks it might have been more perfect. He finds in it an unnecessary development of the works, too many wheels, etc. According to the old manuscript, seven years were spent on the clock, and the mathematician, Oronce Fineé, is said to have constructed it with the help of the best artisans in Europe. Although the outlines and the general appearance are very sombre, yet some parts of it are richly engraved. The foliage of the circular ornaments on the dial (see fig. 8 bis.) is certainly well designed, and agreeably broken by the addition of figures. It might, nevertheless, be considered somewhat redundant.



Fig. 8.

WATCHES COME INTO VOGUE.

In the seventeenth century the fashion of wearing watches, often hung from the waist, soon became thoroughly established among the *gens de qualité;* and, as a consequence, traveling clocks were gradually abandoned. In fact, people were anxious to be seen on a journey without portable clocks, as that alone was supposed to prove that they had a watch, although it might not hang outside. Yet, small timepieces are still mentioned towards the end of the seventeenth century. The *Mercure*, of 1687, tells us that Louis Quatorze presented the Siamese ambassadors with twelve little clocks, made by Thuret, three of which were in gold, adorned with bas-reliefs beautifully chased; adding that they showed the annual and the diurnal revolution, the length of days and nights during the whole year, the sunrise, the sunset, the age of the moon, etc The *Inventaire des Meubles de la Couronne*, dated the 20th of March, 1684, mentions: "A clock to place on a table, in a large gold case with eight faces, in the shape of a dome, 6 inches $\frac{2}{12}$ high and 4 inches $\frac{2}{12}$ in diameter. The dial, circled with diamonds and rubies, was on the top, and the case, adorned with various coloured enamels, was enriched with precious stones. But many considered those timepieces as being nearly a hundred years old."



Fig. 8 Bis.

TABLE CLOCKS GO OUT OF FASHION.

From the very beginning of the seventeenth century, the fashion for clocks had really much altered. Their place being no more on a table, they had to be made rather large so as to attract the attention. Resting on a stand or a piece of furniture against the wall, they often had their hidden face unadorned, which, by the by, did not look very ornamental when they happened to be placed on a mantel-piece with a glass behind. It was also found necessary to

make the dial larger in order to have it show well at some distance, which led to various alterations in the shape of the case.

LOUIS XIII. STYLE.

In France, during the reign of Louis XIII., clocks were generally simple in their outlines. The best specimen of that style is represented in our fig. 9. It is the reproduction of a clock surmounting

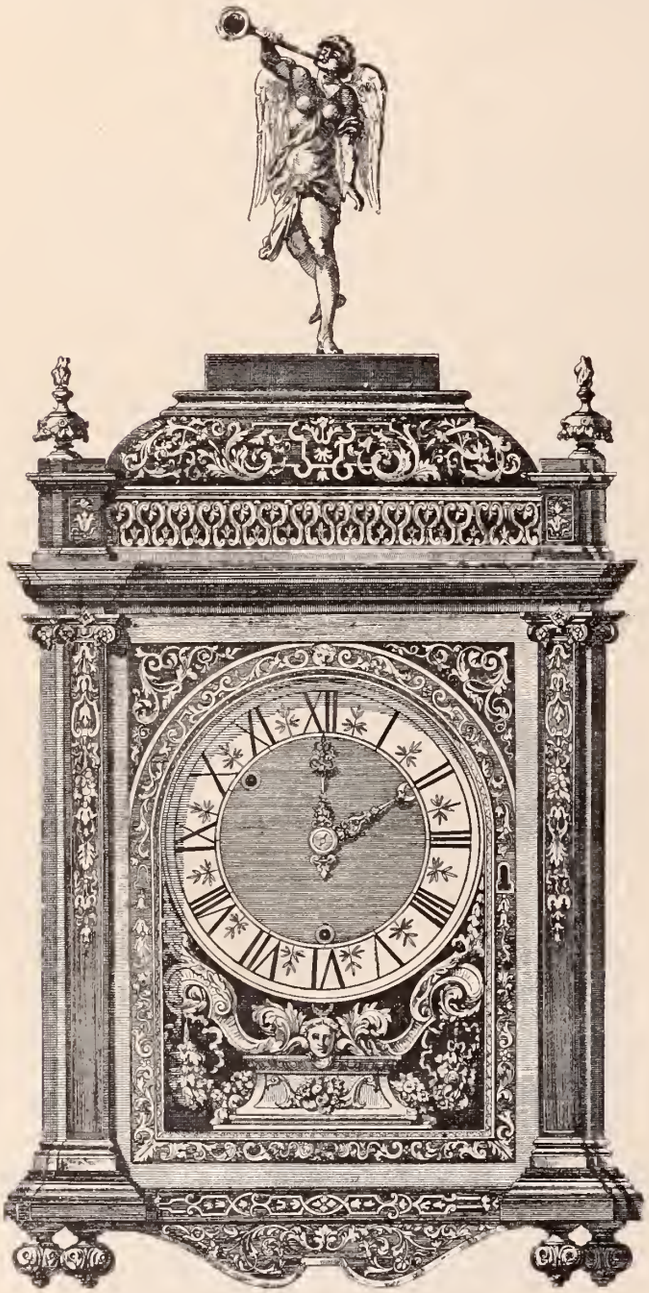


FIG. 9.

Maréchal de Créqui's cabinet, preserved at the Cluny Museum. It is about 55 centimeters high, without the figure of Fame placed at the top, and 73 centimeters with it. The shape is square, and there is a pillar in the Ionic order at each angle. In front there is a door, whose frame is arched at the top, protecting the dial, in brass. All the chased parts—figures, vases, balustrade, capitals, etc.—are of burnished gilt bronze, and the case is made of ebony and tortoise shell, incrusted with elegant yet sober ornaments in tin and brass.

This quiet style, however, does not seem to have been the only one known in France during Louis XIII.'s reign, unless we admit that our fig. 10 represents a clock made to order according to a special design. Its outline is very peculiar, but most of the ornaments on it remind us of well-known details on buildings of the same period, particularly the shell at the top and the head at the base. The latter, with its swelling cheeks and laughing countenance, seems to belong to a plain-looking but good-humored old gentleman, showing no family resemblance to the grinning satyrs of the Renaissance period. This clock, in brass *repoussé*, is richly adorned with ornamental foliage and trophies of war. It must have had a fine effect, hung on the wall of a stately room furnished in the quiet yet elegant style of the time. This original timepiece belongs to M. Le Roy Ladurie.

WORK OF HENRY BRIDGES IN LONDON.

Private English collections contain, besides French and German clocks, some remarkable specimens made in England during the reign of Charles I. Henry Bridges, who was born in London towards the end of the sixteenth century, constructed some very elaborate ones, having acquired a great reputation for automatons. He made for the Duke of Buckingham a very complicated clock, which must be considered, besides, as a fine architectural piece, worthy to be compared to the most elegant monumental clocks.

THE AGE OF THE GRAND MONARCH.

The Louis XIV. period has produced a very great variety of patterns in clocks. The most remarkable among them are those made by Charles Boulle. This celebrated cabinetmaker was born in Paris, although I happened to see, in an English dictionary of industries, that he was an Italian, which led me to suppose that the writer must have mistaken Boulle for Della Bella, a distinguished painter and

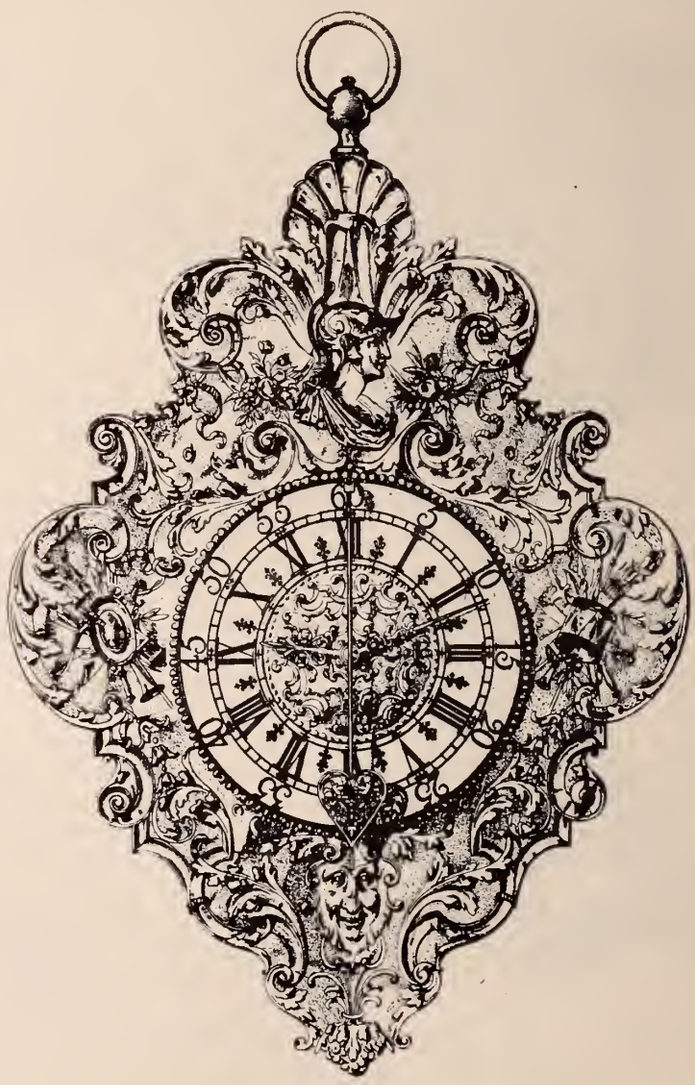


FIG. 10.

engraver, born in Florence, who worked during ten years in Paris (from 1640 to 1650). It seems almost unnecessary for me to describe at length the process used in making those articles known as Buhl-work. The inlaying of various colored metals, well harmonized, on an ebony or tortoise shell background, gives a peculiar appearance of lightness to the most massive piece of furniture. Boulle

also obtained some pretty effects in tastefully combining various pieces of wood of different colors.

The clock reproduced here (fig. 11) is a fine specimen of those timepieces, resting on a stand adorned with metal inlayings. It was one of the most remarkable pieces at the San Donato sale. On the top we see the figure of Time, apparently engaged in mowing down the hours with his scythe. Underneath the dial there is a group of the three Parcæ, represented as young, and apparently attending to their calling in a quiet and easy manner. The artist took upon himself to correct mythology—thinking, no doubt, that the awful countenances of the weird sisters, as sung by the poets, would hardly be in keeping with the pretty details of an elegant clock. All the relief work—applied ornaments and figures—is in ormolu.



Fig. 11.

Very elegant also is the clock shown in fig. 12, although of a different design. The application of the pendulum by Huygens had rendered it necessary to use a hollow stand which, gradually, became a part of the case. Our illustration represents an astronomical clock belonging to the Palais de Versailles. The arms of France are placed at the top of the stand, in front, and Louis Quatorze's initials are on the sides. Although this clock is not slender, it, nevertheless, lacks a massive appearance, owing to the four glass faces, through which we see the works. The case is made of rose and violet woods, and the gilt bronze parts are beautifully chased. The fleur-de-lys, rising between the top arches and the crowning one, are well proportioned; the whole effect being at once stately, graceful and sober.

It is generally believed that Louis Quatorze exclusively encouraged the development of a pompous style. Therefore the reader may be surprised to hear that he had a special liking for fancy clocks. In the *Etat du Mobilier de la Couronne*, dated February 20, 1673, are mentioned two curious specimens of this kind. One of them is described as being a rock of brass, partly enlivened with various colored gold, in front of which stands a figure of Saint Anthony, ringing a bell, with two beadles (suisses), one on each side of him. Before that group spreads a little parterre, having in the center an elegant silver fountain, adorned with three little figures. The whole of it rests on an ebony stand supported by four onions in brass. The other clock is said to represent a little woman in gilt bronze, partly covered with silver drapery. She is placed on a chariot drawn by two leopards, and a monkey is seated at her feet; the whole of it being set in motion by a mechanism hidden in the vehicle.

These original works are not, as might be supposed, preserved as curiosities, in out-of-the-way places. The clock which Louis Quatorze preferred had been placed in the State Hall. Dargenville, a contemporary, mentions it as follows, in his *Voyage Pictoresque aux Environs de Paris:* "When the clock strikes, two cocks sing three times, each, in flapping their wings. At the same moment doors open on the sides and figures appear, each one of them holding a bell in the shape of a shield, on which Cupids alternately strike the quarters with a club. Then a figure of Louis Quatorze, which is a tiny copy of the one at the Place des Victoires, comes out from the center, and above it gathers a cloud from which Victory descends, holding a laurel wreath over the head of the King. A joyful carillon accompanies the whole performance. The following inscription is engraved on the side: 'This horologe was made by Antoine Morand, de Pontdevaux (1706).'"

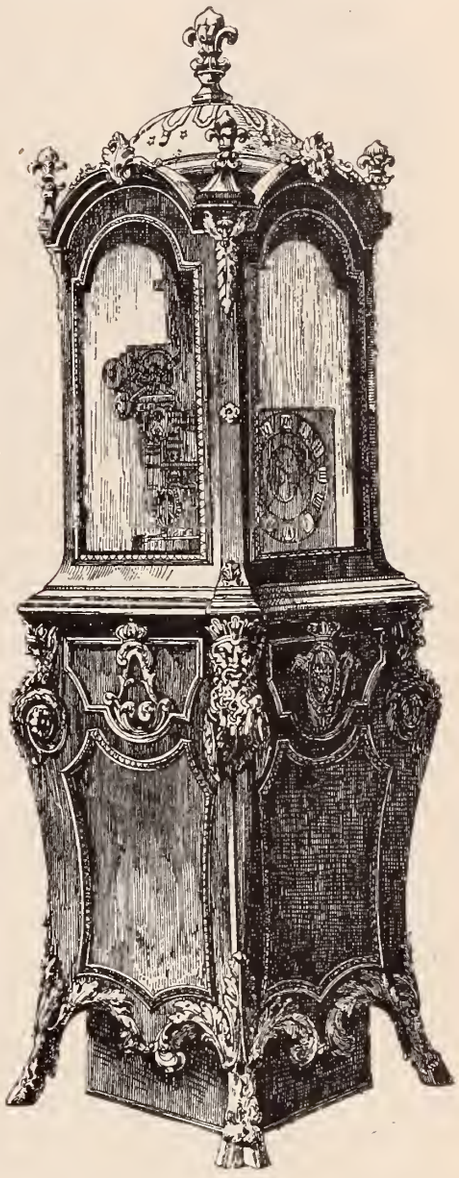


Fig. 12.

STYLE OF LOUIS QUATORZE.

Yet, generally speaking, clocks made during the seventeenth century or at the beginning of the eighteenth were characterized by an elegant yet serious appearance. More of them, designed by such superior artists as Jean Bérain, Daniel Marot and Jean Lepautre, were executed by Boulle, Cressent and other talented cabinetmakers. When we compare together the clocks belonging to that period, we are surprised to see such a variety of outline. It seems as though the artists who designed them had been unceasingly trying to devise new and elegant shapes, but never happened to be satisfied with their work.

(*To be Continued.*)

Competition of Watch Material, etc.—The Section d'Horlogerie of Geneva desires to hold a competitive exhibition of watch material. The competition however, is only for watch manufactories in the Canton of Geneva. The advertisement classifies as follows; *a.* Gold-plating, silver-plating, nickel-plating, stoning and other similar means for ornamenting the plates and bridges; *b.* Gold-plating and stoning wheels used in timepieces; *c.* The preparation of plates and bridges for gold-plating and stoning them (the finish of sides, angles, hollows, etc.) *d.* The finish of steel pieces, such as ratchets, springs, wheels, screws, stopwork and similar pieces. The work intended for the competitive trial must be sent to the address of the "President of the Section on Horology," at the Anthenum, Geneva, before March 1, 1890. It will remain the property of the manufacturer. The awards will consist of diplomas, which may be accompanied by silver or bronze medals, in case of merit. Besides this, the Class of Industry has placed a sum of 150 francs at the disposition of the section, to be distributed at option.

Lathes and Lathe Work.

BY THE MODEL WATCHKMAER.

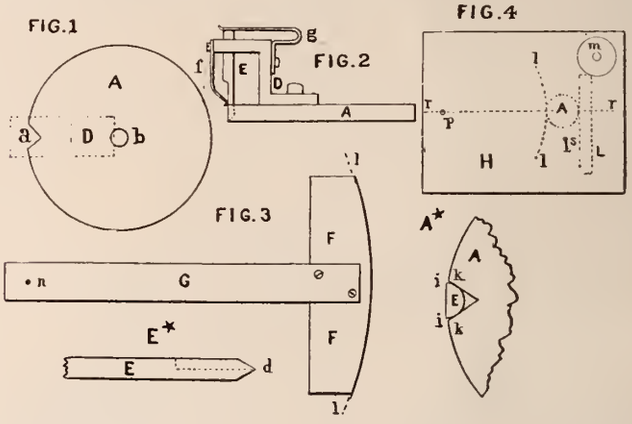


FOR PRACTICAL men nothing beats a practical demonstration, in proof of which assertion let us proceed to delineate some epicycloidal curves by mechanical means. The kind of gear wheels in use among watchmakers are almost universally wheels of 80 teeth engaging pinions of 10 leaves, wheels of 75 teeth engaging pinions of 10 leaves, wheels of 64 teeth engaging pinions of 8 leaves, and wheels of 60 teeth engaging pinions of 6 leaves. Of course wheels of other numbers of teeth are occasionally used, but those enumerated will demonstrate our method perfectly.

The mechanical method of delineating epicycloidal curves will require discs of some hard material to represent the pitch circles of wheels and pinions, and also other discs to represent the generating circles we employ for this purpose. We will suppose, to illustrate, that we are dealing with a wheel and pinion whose pitch diameters stand to each other as 8 to 1, and to make our method more easily understood we will further suppose the large wheel to be 16 inches in diameter, and the small one 2 inches in diameter. For the present it will not be necessary to name the number of teeth in the large wheel or the number of leaves in the pinion. We explained in a former number of this journal that the generating circles of such wheels numbered two and were half the pitch diameter of the two wheels, or rather in the present instance, wheel and pinion; consequently we shall have to provide a wheel 8 inches in diameter and another of 1 inch for such generating circles. In an abstract sense these wheels are only circles, but for our practical purpose we should make these circles of some material that we can readily fashion into discs or wheels, whose edges are of sufficient thickness to allow them to roll together securely. The reader will remember that we demonstrated in a former number of this journal that the epicycloidal curve for shaping the teeth of the larger wheel was produced by rolling on the pitch line of the larger wheel a circle of half the pitch diameter of the smaller wheel or pinion, which in the present instance would be a circle of one inch in diameter rolled on a circle of 16 inches in diameter.

We must now provide tracing points for the 1 inch and 8 inch generating discs. These must be practical working parts and delineate curves for our teeth and leaves. We will describe how to make the 1 inch disc, which description will apply to all the others as they are alike except in size. Let us take a piece of No. 12 sheet brass and turn a disc exactly 1 inch in diameter as shown at *A*, fig. 1, and in one edge make a groove parallel to the axis, and at right angles to the face of the disc as shown at *a*, fig. 1. We next take for a tracing point, a piece of steel wire of such a size as to lie in the groove at *a* and have its center exactly correspond to the periphery of the disc *A*. As it is important that the principles involved in these demonstrations be perfectly understood we will try and be minute in all the particulars. To fit up such a generating disc as we require we place a cock on one face of *A* as shown at *D*, fig. 2, which is a side view seen in the direction of the arrow *c*, fig. 1. The tracing point above referred to is made by taking a piece of Stubs' steel wire about 1-16th of an inch in diameter and ¾ of an inch long and putting it in a wire chuck and turning it at one end to a conical point, as shown at *d*, diagram *E*.* In this diagram the tracer is shown separate: the dotted lines show where it is cut away to correspond to the periphery of the disc *A*. The way to make the tracer *E* is to let the wire we are making it from protrude from the wire chuck about 3-16ths of an inch, then turn a nice conical point as shown at *d*, diagram *E*;* next we flatten one side until we reach the extreme tip of the conical point; we then place it in position, as shown in fig. 2, the cock *D* holding it perfectly upright. We fit two springs as shown at *f*, *g*, fig. 2; the one shown at *f* keeping the tracer *E* securely pressed in the triangular groove at *a*, and the one shown at *g* pressing the tracing point *d* lightly downward so as to incise a fine line on a piece of zinc, which will be described further on. After the tracer *E* is in the groove *a* the edge of the flattened surface of the tracer will slightly protrude above the circumference of the disc *A*, as shown *i i*, diagram *A* *, which is a segment of the disc *A* enlarged to show the fittings of the groove *a* and tracer *E*. These edges are carefully rounded off with a fine file so that the periphial line *k k* is not interrupted by the tracer *E*. The point *d* is now hardened and tempered.

It is not necessary to provide a disc 16 inches in diameter to represent the largest wheel mentioned above; all that we require is a segment of such a wheel as shown at *F*, fig. 3. This segment is 6 inches in length and 1¼ inches in width, and cut from the same brass as we used for the disc *A*. Attached securely to the segment *F* is a bar of the same kind of brass, 8 inches long and 1 inch wide. We drill a hole at *n*, and from the center of this hole, with compasses set at 8 inches, sweep the line *l l*; we then file *F* off carefully to this line, in order that the edge of *F* will perfectly represent a portion of the wheel 16 inches in diameter. Now to use our instrument, we lay and tack fast on a drawing board a piece of flat sheet zinc about 10 or 12 inches square. Such a piece of zinc is shown at *H*, fig. 4. The first use we shall make of it is to test the accuracy



of our 1 inch generating disc *A*; to do so we place a well-fitted pin in the hole at *b*, fig. 1, and also make a hole in the zinc at *m*, fig. 4, to receive the pin. We take every care to guard against lost motion, and turn the disc *A* on the pin in the hole *b* and let the tracing point *d* trace a fine line on the zinc. We remove the disc *A* and carefully measure the circle swept by the tracer *d*, and if it is exactly 1 inch across it is all right and ready for use. We next establish a point *p* on the zinc about as shown. The same pin we used with *A* can now be utilized to put through the bar *G* at *n*. We draw a fine radial line from the centre *p* as shown at *r r*, fig. 4, and then place the segment *F* and bar *G* on the zinc sheet on our drawing board; the pin we used for holding *A* is passed through the hole *n*, fig. 3, and hole *p*, fig. 4. The edge of *F*, fig. 3, will now correspond to the dotted line *l*, fig. 4.

We place the one-inch disc *A* on *H* so the tracing point *d* rests on the radial line *r r*, and then place a rule or straight edge, as shown at *L*, fig. 4, so it bears firmly against *A*. It is to be understood the segment *F* is temporarily attached to the sheet of zinc *H* so as not to move while *A* is rolled along the edge. We move the rule in the direction of the arrow *s*, gently pressing *A* down on the zinc, and the tracing point *d* will incise a firm line which will be an almost perfect epicycloid of the proper form for the ogive of the teeth of the 16-inch wheel. It is optional in delineating such an epicycloid whether we start the tracer on the radial line *r*, or, after the epicycloid is formed, draw a radial line from where the epicycioid commences on the line *l l* to the center *p*. How this epicycloid is employed will be subsequently considered.



*A Complete History of Watch and Clock Making in America.

[By Chas. S. Crossman.]

Number Forty-one.

Continued from page 89, December, 1889.

CLOCK MAKING:

ITS THREE STAGES OF DEVELOPMENT.

IN WRITING a history of the clock making industry in America, it is necessary to preface it by a few explanatory remarks. In the first place, we must divide the industry into epochs or periods, which may be classified as follows: First—the period during which all the clocks produced were of the English or high case kind; this includes all the colonial clock makers of the last century. Then came the era of wooden clocks, commencing in the latter part of the seventeenth century and running over into the first of the present century, and then came the wood and brass mantel clock period, which had its rise with the manufacture of rolled brass and with the introduction of brass and, later, of steel mainsprings. The sizes of these latter clocks have been reduced, until now we find them in almost every conceivable size and form. In speaking of these various periods we have not mentioned exact dates. It was impossible to do so because, of course, one period did not exactly stop where another commenced, but in certain localities they overlapped each other by a long number of years as, for instance, in Pennsylvania the old-fashioned high case clocks were adhered to long after the manufacture of wooden clocks had been commenced in Connecticut, the old style brass clocks having been entirely abandoned there. Many a Pennsylvania town had its brass clock maker just as it had its blacksmith, preacher, or any other regular institution, for the people had become too firmly wedded to these old ways. When they wanted a clock this often necessitated a delay of three months or more after the order was given, but time (not the clocks) was no particular object in those slow-going days. When we divided the industry into periods above we did not refer to these particular localities but to the industry as a whole. Connecticut is the chief place of evolution of the clock industry, the place which really made these epochs by the foresight and great perseverance of its early pioneers in clock making. They were not satisfied with using English plates, pinions and dials and calling the finished clock "American." It was not in keeping with the spirit of independence of the new-born nation. But as we are to speak of the different epochs in regular order chronologically, we must hasten and first turn our attention to the colonial clock makers of the first epoch.

As has been just alluded to, most of these clock makers used English plates, pinions and dials, imported in the rough state. The plates were cast of brass, and the pinions were of steel swedged out and perhaps roughly turned, and the teeth sawed in the pinion. In some instances the teeth were not cut at all, as some of the early clock makers had their own pinion-cutting machines, but the greater part of the work was done by hand-filing. Some of the filing shows a wonderful amount of skill in that line. Some of the colonial makers constructed clocks that were entirely "American," casting their own plates and forging all their own steel parts, and even casting their own brass dials; but the dials were generally made of iron and painted. The paint was specially prepared for the purpose and fired or baked on after the dial was painted, which accounts for the durability of these dials on many of the old clocks that have performed their work for more than a century and are still in a good state of preservation. In writing the history of these colonial clock makers, the information regarding them is quite scanty and amounts only to traditions in some instances, while in reference to others reliable data have been obtained which will be instructive to every one who is interested in the horological industry in America.

The first mention of a clock maker in America is in the history of Pennsylvania and Western New Jersey, published in London in 1698, a photo-lithographed copy of which is now in the library of the New York Historical Society. Among the artisans mentioned in the work is one clock maker. We have no means of knowing his name or whether he actually did or did not make any clocks. There is no mention of any clock makers in New England as early as this, yet without doubt there were some. The first clock was brought to New England in 1639 by Rev. Obadiah Holmes, a Congregational minister, who subsequently seceded to the Baptist ministry. He resided in Salem, Mass., until 1650, when he took up his permanent home in Newport, R. I. The fact of his possessing this clock, which is now in the possession of the Long Island Historical Society, certainly speaks for his wealth.

In a pamphlet published in Boston, entitled "Customs of New England," the following appears: "Jos. Essex and Thos. Bradley in 1712 offered for sale in Boston the following clocks from England: thirty hour, one week, one month, etc. Repeaters were offered in 1716, or four years later."

THE FIRST CLOCK MAKER IN NEW ENGLAND.

Benj. Bagnall is the name of the man who really appears as the first clock maker in New England. The writer has, together with a descendant of Mr. Bagnall, made diligent research to obtain, if possible, the date of his start in Boston, but thus far has been unable to find anything more than a tradition bearing on the subject. The first definite knowledge of him as a clock maker refers to the year 1724, when, according to an entry in the Treasurer's book of Charlestown, Mass. (p. 23), he was paid on August 22d of that year for having cleaned the public clock of the town. One of the high case clocks made by him is now running in the Genealogical Historical Society's rooms, in Somerset street, Boston, and is in a good state of preservation. It is probably one hundred and fifty years old. He was succeeded about 1740 by his son Samuel, who, so far as is known, never attained any great prominence as a clock maker.

THOMAS CLAGGET, OF NEWPORT, R. I.

Thomas Clagget, of Newport, R. I., is the name of another prominent colonial clock maker; in fact, it may be said of him that he was the most prominent maker in the colonies in the earlier part of the last century. He was a native of Newport, having been born there in 1696, and was admitted a freeman in 1726. It does not appear that he ever served an apprenticeship to the business; but his subsequent career proved him to be a man of genius in many directions, and he undoubtedly took up the business without a previous knowledge of it. His clocks, some of which are still running, certainly show that he became master of his trade. One of them, now in the Rhode Island Historical Society's rooms (the movement of which the writer was granted the privilege of examining), fully bears out the statement just made. Mr. Clagget did not confine himself to mechanical pursuits alone; he was also one of the most prominent Baptist laymen of that day, and could preach a good sermon when called upon. A controversy arose in the Baptist church of Newport with reference to some doctrinal questions; the church became divided, and he wrote a book entitled: "A Looking Glass for Elder Clarke and Elder Wightman and the Churches under their Care, etc." The volume contains two hundred and thirty-one pages,

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and was published in Newport in 1731. There is a tradition that he made an electrical machine and made electrical experiments, but thus far no substantial ground can be obtained for this statement. His brother William was associated with him to some extent, but never obtained any great notoriety. Mr. Clagget died in 1749, and was succeeded by James Wady for a short time.

OTHER COLONIAL CLOCK MAKERS.

From the last named place we will now travel northward to the quaint old town of Ipswich, Mass., where lived two clock makers, one of them named Richard Manning. His clocks appear dated as early as 1748, and were of peculiar construction, the pillars and plates, which are in strips, being of iron, with brass bushings for pivots. The striking part is a study in itself, being quite different from the usual form of striking work found in the high case clocks of that day.

The other Ipswich clock maker was Aaron Smith, a native of the town, and a metal worker by trade. It was for this reason that he was detained at home to make bayonets, while his comrades, who were the minute men of the town, went to join in the battle of Bunker Hill. After the war was over he turned his attention to clock making, especially when there was but little to do at his trade. His first clocks were timepieces, but he afterward made striking clocks.

Elias Conant is another of these old makers of whom we will give a brief notice. He was born in Bridgewater, Mass., in 1749. Just when he commenced to make clocks does not appear. So far as we can learn he never served an apprenticeship. He was one of those men who had the happy faculty of "picking up" a trade, and that he did some things in a makeshift way is illustrated by his going out to set up the clocks that he had made and using for a weight a stocking leg filled with iron, stones, or any other available article heavy enough. It is said of him that the directions that he left after putting up the clock were: "If it don't go put on more steam." He would often partition off one corner of the room and cut a hole through the boards so that the dial could be seen and in this way make a case for the clock where the customer could not afford a regular case. He removed to Lynn, New Hampshire, about 1812, and made clocks there until his death, a few years later.

Another colonial clock maker who deserves passing notice is John Bailey, of Hanover. In the history of Hanover, on page 202, the following appears in reference to him: "Mr. Bailey was a natural mechanic, a man of great ingenuity and a successful inventor. He was a clock maker by trade, also a manufacturer of compasses. Many of his clocks are still preserved in the town, and are creditable specimens of his skill. He was an upright and zealous member of the Society of Friends, and a minister among them, traveling into different states to speak, as the spirit moved him. He was an honest man, of great simplicity of character, a worthy citizen and pre-eminently a peacemaker. He resided near Hanover Four Corners." Turning to "White's Memoirs of States," we find that he is credited with building the first head spindles for cotton spinning. His daughter, Anna M. Bailey, who resides in Lynn., Mass., says that he was the first man to make the crooked-nose tea kettle. Reference has been made to his inventions in other lines. Probably none was more important than his patent steam jack, for the purpose of turning meat before the fire. The patent papers bear the date of February 23, 1792, with George Washington's and Thomas Jefferson's autograph signatures. It was a very unique device, but our space forbids a detailed description of it. So far as known, Mr. Bailey served no apprenticeship. He made clocks before the Revolution, but during that war gave his attention to the repairing of fire-arms, like many other men of mechanical turn. When peace was declared the government was indebted to him several hundred dollars for his work; but meantime he had become a Quaker, and refused to accept the sum due him. He was succeeded in 1815 by his son John Bailey, Jr., who continued the clockmaking business but a few years.

(*To be Continued.*)

New Perpetual Self-Winding Watch.



VARIOUS attempts have been made to construct a watch, some part of the mechanism of which should effect the winding of the mainspring. For instance, M. Lebet sought to produce this by the action of closing the hunting cover. There is a short gold arm projecting beyond the joint. This arm is connected, by means of a double link, to a lever, one end of which is pivotted to the plate. To the face end of this lever is jointed a scythe-shaped rack, which works into a wheel with ratchet-shaped teeth on the barrel arbor. A weak spring fastened to the lever serves to keep the rack in contact with the wheel teeth. Instead of the ordinary fly spring there is a spring fixed to the plate and attached by means of a short chain to the lever. As this spring pulls the cover open, the teeth of the rack slip over the teeth of the wheel on the barrel arbor. Each time the wearer closes the cover the watch is partly wound. By closing the case eight or nine times, the winding is completed. The ordinary method of hooking in the mainspring would be clearly unsuitable with this winding arrangement, because after the watch was fully wound, the case could not be closed. M. Lebet places inside the barrel a piece of mainspring, a little more than a complete coil, with the ends overlapping, and to this piece the mainspring hook is rivetted. The adhesion of the loose turn of mainspring against the side of the barrel is sufficient to drive the watch, but when the hunting cover is closed, after the watch is wound, the extreme strain causes the mainspring to slip around the barrel. This method of winding just described can be applied only to a hunting watch.

Readers of THE JEWELERS' CIRCULAR will remember that in 1881 its columns contained the description of another "Perpetual Remontoir," the invention of a Herr von Lœhr, of Vienna, in which the motion of the wearer's body is utilized in winding. There is a weighted lever pivotted at one end and kept in its normal position against the upper of two banking pins by a long, curved spring so weak that the ordinary motion of the wearer's body causes the lever to continually oscillate between the banking pins. Pivotted to the same center as the weighted lever is a ratchet wheel with very fine teeth, and fixed to the lever is a pawl which engages with the ratchet wheel. This pawl is made elastic, so as to yield to undue strain caused by the lever vibrating after the watch is wound. The connection between the barrel arbor and the ratchet wheel is made by a train of wheels. A second pawl prevents the return of the ratchet wheel. For setting the hands, there is a disk which has a milled surface, slightly capped, to suit the point of a finger.

A notable German firm recently obtained a Swiss patent which unites the advantages of a self-winder with those of a so-called "Perpetual" (watch with percussion movement). This interesting invention is shown in the accompanying illustrations. It also contains an ingeniously constructed up-and-down work, which always shows the state of the tension of the mainspring and how much longer the watch will go without further winding. Such an arrangement is actually necessary for watches of this "Perpetual" kind, which, as has been stated in the preceding remarks, are wound by the motion of the body. The wearer would otherwise have no knowledge whether his watch is nearly run down or is tightly wound. None the less advantageous and ingenious is also the stop-motion arrangement of the watch in question, by which is suspended the further winding of the spring, when not necessary.

As it would be unnecessary, when winding the watch by percus-

sion, to let all the stem-winding wheels revolve at the same time, the inventor introduced another novelty, necessary in this style of watch, by which the stem-winding arrangement is generally thrown out of depthing, and set into operation only by unlocking a lever.

The going train of the watch is arranged in the customary manner, like a Glasshütte watch, and has not been shown in the illustra-

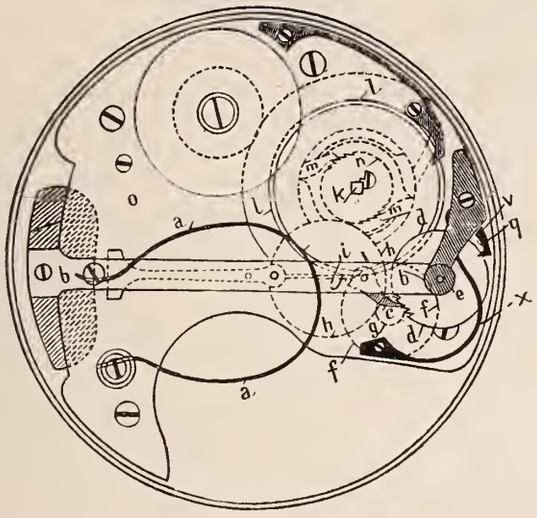


Fig. 1.

tions, because unnecessary and in order to show the perpetual winding arrangement more clearly.

As specified, in watches with percussion winding the tension of the mainspring is effected by wearing the watch in the pocket or else by any other motion productive of a percussion. We therefore have a spring, *a*, in fig. 1, which folds in equipoise a weighted lever, *b*, which, as shown in figs 1 and 2, in its descent again propels by its click *c* the ratchet wheel *d* for a certain distance. The pinion *e*, fastened on *d*, stands in depthing with the wheel *f*, and the latter, by its pinion *g*, with the wheel *h*, which by its pinion *i* actuates the wheel *l*, revolving upon the barrel arbor *k* (fig. 1).

Upon the wheel *l* are located two clicks, *m*, which, after every motion of the percussion work described in the preceding, propel the ratchet wheel, firmly fastened upon the barrel arbor *k*, and thereby wind the mainspring.

In order to guard against too many percussions, and thereby an

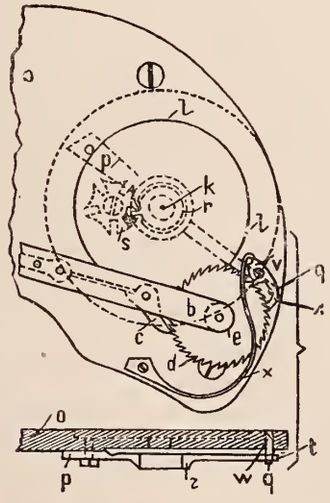


Fig. 2.

overwinding and breaking of the spring, the inventor has introduced the following hitherto unknown mechanism :

On the lower side of the upper plate *o*, fig. 2, is located, standing freely, the elastic piece *p ;* at the front end, *t*, of this elastic piece, approaching to the plate *o*, is a pin, *q*, which passes through, but does not project beyond, the plate *o ;* this pin *q* has an inclined plane, *w*, fig. 2.

The rounding at *r* spans concentrically, but freely, the barrel pivot, and toward the side of the barrel it has a shoulder in the shape of a cone perforated through its axis. Upon the upper side of the barrel is located the stop wheel *s*, with its full tooth (not filed out round) upon which a wedge shaped finger is arranged in such a manner that when the watch is fully wound, it applies itself to the circular shoulder of *r*, and thereby moves the front end *t* from *p* toward the plate *o*, whereby the pin *q* issues beyond the plate.

By the issuing of the pin *q*, fig. 2, above the plate *o*, its inclined plane *w* sets out of depthing the click *v*, which in the known manner prevents the return motion of the wheel *d* by the weighted lever *b*, fig. 1, and the automatic percussion winding arrangement is in this manner set out of activity.

The spring *x* presses the click *v* always automatically again into the teeth of the wheel *d*.

In order to prevent the stoppage of the watch, by reason of the small number of percussions, and the consequent running down of the spring, a stem-winding arrangement has been introduced, as shown in fig. 3, which, however, can at once be set into activity, as also shown. Spring 14 actuating upon lever 13, sets it out of gear ; by pressing down the lever 13 as far as the pin 12, it becomes active at once.

In order to ascertain at any time the state of tension of the spring,

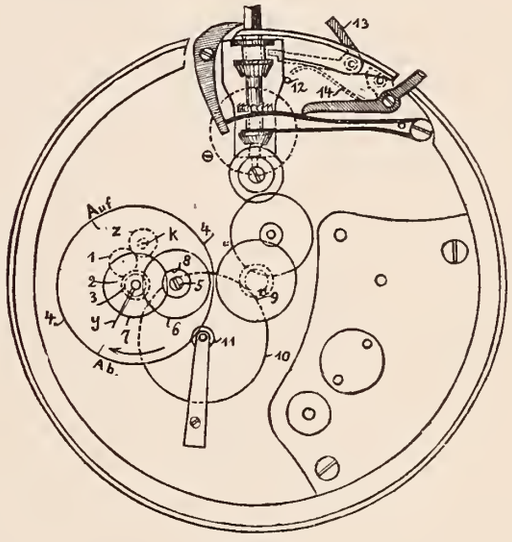


Fig. 3.

a hand (*y*, fig. 3), moving around two-thirds of a circle upon the dial, indicates this state at any time, and also points out how many hours the watch can still run before needing another winding.

This up-and-down work, shown in fig. 3, is arranged in the following manner :

Upon the barrel arbor *k* sits the wheel *z*, which stands in depthing with the wheel *l ;* the latter depths into wheel 2. Upon the arbor of wheel 2 is firmly fastened the pinion 3 with 14 leaves, and underneath it is the wheel 4 with 90 teeth, moving loosely around this arbor ; upon this also is, at 5, fastened the wheel 6 with 42 teeth movable around its axis, and depthing into pinion 3. Upon a round pivot forming the prolongation of the arbor of the wheel 2, now is mounted the wheel 7 with 36 teeth, carrying the up-and-down hand ; this wheel depths into the pinion 8 with 18 leaves. By this transposition the hand *y* moves toward "up" while the watch is being wound.

The motion of the hand *y* in the direction of the arrow, fig. 3, toward "down," takes place through the center wheel in the following manner : On the center staff sits firmly the pinion 9, fig. 3, with 18 leaves, which depths into the wheel 10 with 75 teeth, with its axis in bearing in the plate ; upon the axis of the wheel 10 is the 10-leaf pinion 11, arranged in such a manner that it depths into the previously mentioned wheel 4, moves this in the direction of the arrow, and thereby conducts the hand *y* toward "down."



Ink Stains on Silver.—The tops and other portions of silver inkstands frequently become deeply discolored with ink, which is difficult to remove by ordinary means. The stain may, however, be completely eradicated by rubbing it with a paste formed of a little chloride of lime and water.

Gilding without Battery.—Articles which do not require much handling may be quickly gilt without a battery as follows: One part of chloride of gold and four parts of cyanide of potash are dissolved in boiling distilled water; the articles are hung in this solution, tied with a fine copper wire to a strip of zinc, scratched clean, left in it for a few minutes.

To Clean Zinc Articles.—In order to clean articles of zinc, stir ordinary rye bran into a paste with boiling water, and add a handful of silver sand and a little vitriol. Rub the articles with this paste, rinse with water and dry rub with a cloth. A polish will thereby be obtained.

Gold-Bronze Varnish.—R. Kayser recommends in the *Bav. Ind. and Geod. Zeitung* the following varnish: 100 grains of finely ground dammar resin are mixed with 30 grains calcined soda and kept melting for two or three hours, while diligently stirring. The cold ground mass is dissolved with 0.9 liter (1 liter = 8.454 gills) benzine in a bottle, and filtered. From 300 to 400 grains bronze color can be treated with the filtrate.

Metal Casts.—Metal casts of delicate natural objects, such as flowers, leaves, insects, etc., are, according to Abbot, obtained in the following manner: The object—for instance, a dead bug—is first placed in its natural position with feet fastened upon an oval rim of wax. It is next freely suspended within a pasteboard or wooden box by means of a few wires. A few thicker wires are led to the object from the sides of the box, to form air escapes. A sharp-pointed piece of wood is placed upon the back of the insect, and serves to form the hole for casting. The box is next filled with a paste of three parts pulverized plaster-of-Paris and one part of brick dust, stirred with a solution of alum and sal-ammoniac. It is best to previously coat the object with this mass, to avoid the formation of air bubbles. After the hardening of the form, it is slowly dried, next heated stronger and stronger, whereby the body within is reduced to ashes, and then left to cool slowly, to prevent cracks. In order to remove the ashes, the cooled form is filled with mercury, which is well shaken and poured out again, which operation is repeated. The thick wires are next withdrawn, the form heated and filled with the molten metal. After cooling, the gypsum is carefully heated in water, and broken away.

The Jewels in Swiss Work.—The condition of the jewels in Swiss work is of some considerable importance, and if the repairer aspires to be a good jeweler considerable practice with the lathe and mandril will be necessary. If it is only desired to replace holes from a stock kept for that purpose the holes can generally be replaced without much trouble by raising the edge of the setting at one side, to allow of the insertion of the jewel, and securing it in position by rubbing the setting over the stone with a well burnished rounding center in a handle; a strong and fine-pointed arbor will do to raise the edge for the insertion of the stone. Where a setting is too badly injured to hold a stone properly, an English hole with a brass setting may be fitted in with a chamfer, or soldered in. Loose jewels may always be tightened with a rounding arbor or center, and should always be tried for tightness, as troublesome variations in depth and freedom are caused, which often escape observation.

Sliding Carrier.—This useful adjunct, the sliding carrier, though not generally supplied with the Jacot tool, may with advantage be fitted to it. It is often handier than the screw ferrule, and saves time when used, instead of waxing or cementing. A small steel plug or arbor is fitted to one of the centers. The ferrule of steel runs on a collet of hard brass, and is kept in its place by a small washer. The collet is pierced to move freely on the steel arbor, and its projecting end slit, and then pinched together, so as to grip the arbor sufficiently tight to remain in position when in use, and yet not so tightly that it cannot be moved to and fro without trouble. Holes may be made at convenient positions in the ferrule to receive the carrier pin. The shake between the crossings is not objectionable with small-sized wheels, but for large and heavy balances, etc., two pins and a large ferrule may be used. To compensate for the room taken up by the projecting end of the collet, a little is sometimes taken off the boss of the Jacot tool.

To Copy Drawings.—According to the *Deutsches Baugewerbe-Blatt* the following affords a simple means of copying a drawing on ordinary opaque drawing paper: Stretch the paper over the drawing in the usual manner and soak it with benzine by the aid of a cotton pad, when the paper becomes completely transparent. On this the drawing can be traced either with India ink, pencil or water color. The benzine evaporates on exposing the paper to the air, and leaves it in its normal condition.

The Motion of the Balance.—The complete or full vibration of the balance is a motion produced by several additions of the impelling force, the excursion of the balance emanating from the first impulse frequently being about 120°, by measurement on the circle of the balance, while the vibration at the ends of the additional impulse is perhaps 200°; this, doubled for both sides of vibration, makes 400° totally, so that the impulses, as we see them at the full vibration, are given when the balance is already in motion, and no mechanical power ever operated with its full energy when the impelled body is already in motion, and in this case the force of pressure of the escape wheel and lever gradually decreases at the crank of the balance or roller, and recedes faster from these impulse agents. It is only at the first impulse that the energy of the main power is fully effective in impelling the balance, all after impulses gradually decrease in intensity up to the full vibration.

Demagnetizing Watches.—There are several methods in use, and for some of them costly machinery has been gotten up for the purpose, and when a watchmaker living in or near a large city, where a watch can be demagnetized "in style," it is better, perhaps, that he have it done by somebody who understands and makes a specialty of this delicate business. If not, however, let him try the following empyrical method: Take a common horseshoe magnet, and magnetize a piece of steel or a bar, if you wish, and hold the bar in front of the magnet as near as possible, without touching, reversing the poles by turning the piece of steel as quickly as possible back and forth several times, receding as you invert, and you will find the magnetism entirely gone from the bar of steel.

To Solder Small Holes in Platinum.—A ready means of soldering the minute holes which occur in platinum vessels which have been in long use is as follows: A few milligrams of chloride of gold are placed over the flaw, and warmed to fusion. The fused mass is then heated in the flame of an oxyhydrogen blowpipe, when the gold salt is reduced to the metallic state, leaving a neatly soldered spot.

To Impart a Brownish Tone in Bronzing Brass.—The following composition has been recommended: plumbago 1 oz., sienna powdered 2 ozs., jewelers' rouge ½ oz., solution of ammonium sulphide about 15 drops, water sufficient to make a paste. The proportion of ammonium sulphide to be used depends upon the depth of color desired and can best be determined by experiment.

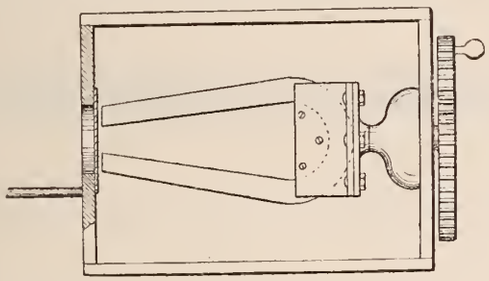


A NEW WATCH DEMAGNETIZING MACHINE.

Watchmakers throughout the world still continuing to have their attention engaged on the subject of demagnetism of watches, they are naturally interested in any new device invented for the purpose of correcting the evil effects of magnetism upon watches and thus restoring them to their timekeeping qualities.

The accompanying diagram represents a device for demagnetizing watches, patented Dec. 24, 1889, by Francis J. Whilton, Boston, Mass. It consists of a permanent magnet, either simple or compound, of convenient form, and mounted on a horizontal shaft on the end of which is secured a pinion. A large crank gear meshes with this pinion for the purpose of rotating the magnet, and is at the will and perfectly under the control of the operator. The device is encased in a box of convenient size, the gears being on the outside. Adjacent to the poles of the magnet is an opening in this box to allow the operator to bring the watch under treatment, as near to the poles of the magnet as possible. For preserving the watch or watch parts from injury by coming in contact with the magnet during the operation, the inventor has contrived an ingenious device which consists of a disc or sheet of non-magnetic material arranged in such a way as that it shall press gently on the poles of the magnet without binding.

The mode of operation is as follows: If the watch to be treated is an open face, and without case springs, it is unnecessary to take the



movement from the case. The watch is taken in the left hand and placed in the hole in the box close up to the non-magnetic plate. With the right hand the crank gear is turned gently, while the watch is slowly drawn from the center of influence. As the watch gets farther and farther away from the center the speed of the machine is increased until the watch is out of the magnet field. Care must be taken to preserve a straight line in moving the watch away, and for this purpose a guide rod is provided.

A common compass may be used for testing. It is claimed, that it is possible to obtain with this device results so satisfactory that no trace of magnetism shall be left.

If the watch to be treated is a hunting case it is best to remove the case and treat the movement separately, especially if it be a ¾ plate or bridge movement; the case springs are left also for separate treatment. The mode of demagnetizing is the same as with the open face watch.

In slightly magnetized watches it is found that all the steel parts are not affected. In such cases if the workman will test the parts for magnetism, the affected parts may be treated separately and without the movement intact.

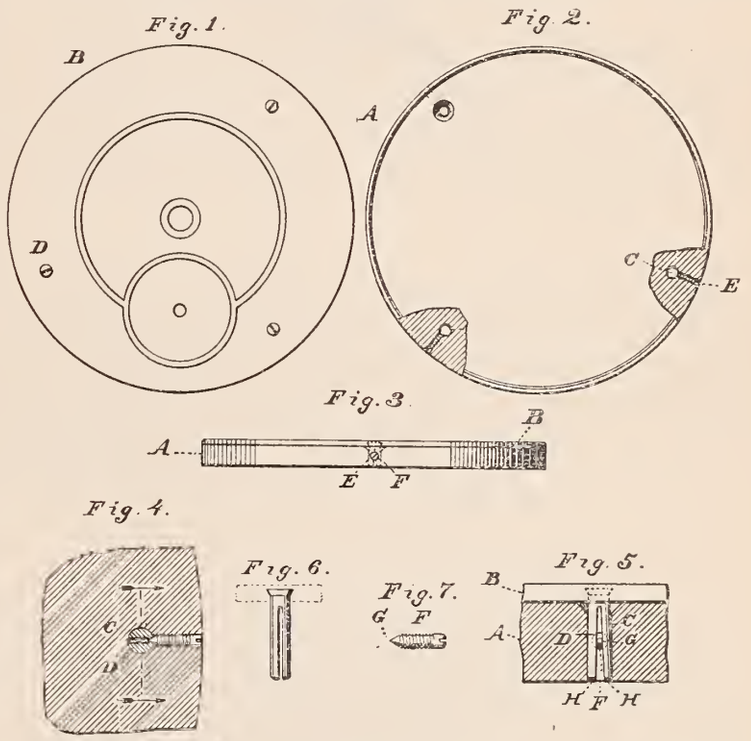
In Mr. Whilton's process, the watch or parts treated are subjected to a rapid and constant change of polarity while in the magnetic field. As the distance between the poles of the magnet and the watch movement is increased, each change decreases in intensity, until the watch leaves the magnetic field; the last change being a minimum one and leaving the steel parts in practically their normal condition.

The advantages claimed for this device are, first: that the machine does not require connection with an electrical current of any kind, thus avoiding "burning out" or "short circuitings;" secondly: it is self-supporting and will last for an indefinite period.

DEVICE FOR SECURING DIALS TO WATCH PLATES.

Devices such as specified in our head line are many and of varied construction. The new one, about to be described, on which Ferdinand F. Ide, Peoria, received patent letters on January 14, seems to embody a simple and effectual remedy for the number of loose and cracked dials to be seen among our American watches.

In the old pin arrangement the pins were a constant source of annoyance owing to their liability of falling out and lodging in the train of the watch. The later device, still much in use, consisting of pointed screws which carry the foot before them to the opposite side of the hole in the pillow plate, holds the dial rigid, but strained, whenever the foot which is moved after the engaged screw causes the dial to spring, which is very often. This springing, in its turn, sooner or later causes the dial to crack or break, and if the dial is not very carefully seated, the least pressure in casing or in putting on the dustband will force it down to the plate, and it will very



often be cranked by the foot holding it up. It is estimated that fifty per cent. of all the double sunk dials now in watches and placed on by this old method are clearly or minutely cracked. The older the watch, the plainer the crack. Another fault of this method resides in the fact that, there being no spring or give, the least pressure in casing or in packing for shipment will cause the screws to become loose and work out.

The purpose of the present invention is to obviate these faults. Figure 1 of the drawings is a representation of the invention, and is a view of the under side of the dial. Fig 2 is a top view of the watch plate. Fig. 3 is an edge view of the plate and dial. Figs. 4, 5, 6 and 7 are details. *A* designates the watch plate provided with the apertures *C*, which receive the feet *D* of the watch dial, these feet being metallic studs, which are divided or split endwise, the cleft being radial with relation to the center of the dial plate. Communicating with each aperture *C* is a threaded perforation *E*, which extends inward from the edge of the plate radially.

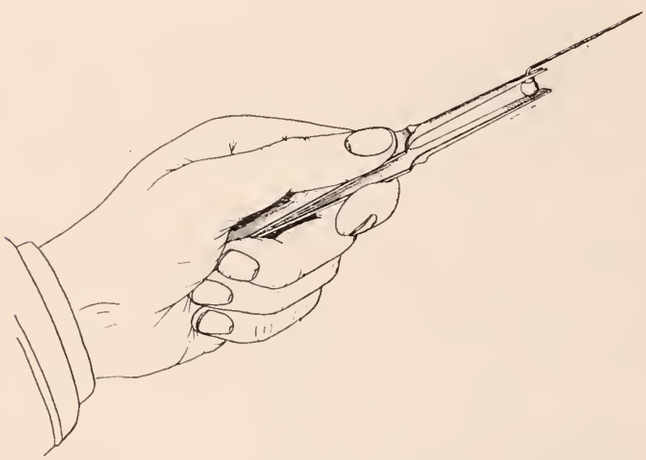
F is a small screw to enter the perforation *E* and engage its thread. This end has a pointed conical end *G*, which, when the screw is driven home, is designed to enter the cleft of the foot of the

dial plate and to spread the branches *H H* thereof to cause the latter to engage the wall of the aperture *C*.

A dial, if properly held down when screws are inserted, assumes its position without being bent or sprung. If not entirely down when adjusted, a pressure will put it to its place without breaking. This invention has been in use by an American watch co. for nearly one year, with gratifying results.

PATENT SOLDERING TWEEZERS.

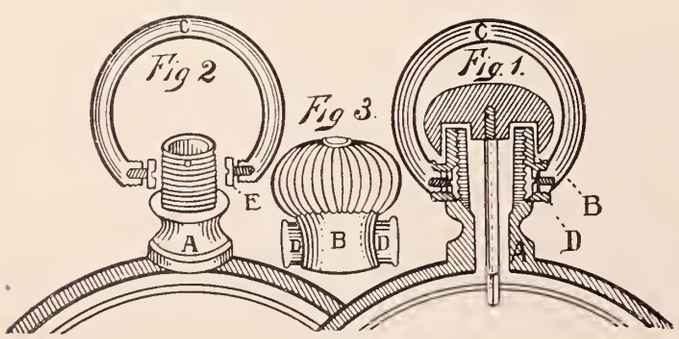
The diagram below illustrates the manner of using a new soldering tweezers, upon which Moses Green, Jr., of Knoxville, Tenn., received letters patent on Feb. 4th. The device is intended for use by jewelers, watchmakers and other mechanics whose trade requires the delicate handling and soldering of fine parts or objects. Its original feature consists in one of the legs being provided with an



elongated tapering slot for receiving and holding stems of different diameters in opposition to the article held between the legs. At the same time the device may be used for the common purposes of an ordinary pair of tweezers, such as picking up or handling small objects, etc. The advantages of these tweezers are especially appreciated when used in repairing, for holding scarf-pins and studs of any shape, round and oval balls, push pin caps and loops on coins.

ANOTHER SAFETY WATCH BOW.

To meet the demand for a device that will more securely fasten the bows of watches to pendants than those in use, J. D. Scoots and C. E. Carpenter, of Horseheads, N. Y., have jointly patented an improvement of which diagrams are given herewith. Fig. 1 is a view showing the parts connected. *A* pendant, *B* sleeve, *C* bow, *D* ear. Figs. 2 and 3 are sectional views; *A* pendant, *B* sleeve, *D D* ears, *E* screws in the ends of the bows.

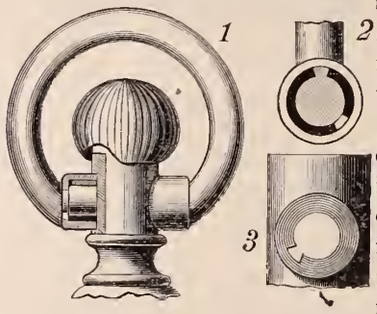


The ends of the bow are screw-threaded with right and left hand threads; when sprung on to the ears the sleeve is revolved through the bow until the latter is screwed into the ears; the screws are then inserted into the ends of the bow from the lower end of the sleeve which is then attached to the pendant.

It is claimed that it is impossible to remove the bow without the use of tools.

AN EFFECTIVE WATCH BOW.

The diagrams below give different views of a patent watch bow, which C. L. Hoefer of Kearney, Neb., has invented, and which is a very cheap, simple and effective device. Fig. 1 shows the improvement applied to a watch pendant; fig. 2 is a transverse section, and fig. 3 a side view of the pendant with the bow removed.



The lugs are swedged at the end of the bow in a die without heating or soldering, thus making the ends very hard; again, in soldering the bushes or bosses into the pendant, care is taken to set the notch in the boss in such a manner that the lug of the bow will slip in the notch only when both the front and back caps of the case are opened or removed, so that the top part of the bow rests on the center part of the case only; when the front and back caps of the case are closed the bow cannot be pulled out at all; the small notch in the boss is entirely hidden from view by the lower projecting part of the bow in front of the boss. The inside of the stem has, wherever the stem is very thin, a plate soldered with the boss, thereby making the case dust-proof at that place.

The device can be applied to any kind of case.

NEW TOOL FOR WATCHMAKERS.

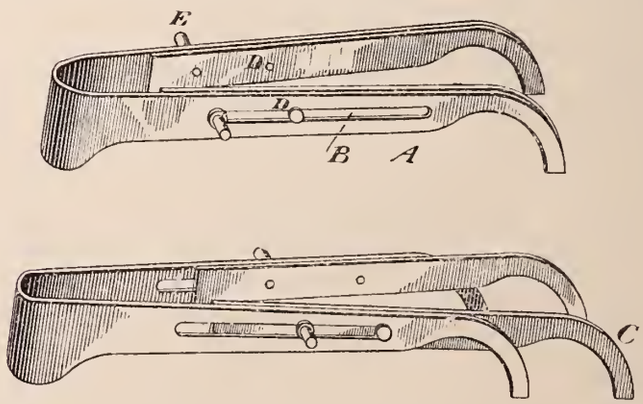
Among the useful tools for the watchmaker that have recently been put upon the market is that herewith illustrated—a combination stem-wind key and case opener. Tools of this class save much



valuable time that is usually lost in changing tools at the bench. The combined key and case opener is made by O. W. Bullock & Co., Springfield, Mass.

ADJUSTABLE WATCHMAKERS' TWEEZERS.

An improvement in tools which seems to contain several praiseworthy features, is that of watchmakers' tweezers patented Jan. 28, 1890, by Edgar P. Swain, of Yazoo City, Miss. The immediate object of the invention is to provide a tool which may be readily



adjustable, so as to adapt it to use in various classes of work, such as fitting, soldering, holding articles of irregular shapes or several pieces at a time. It must be thus possible to easily convert the tool into either a heavy and rigid set of tweezers, or it may with equal facility be converted into a sensitive tool suitable for the more delicate classes of work; or into a set of tweezers having double grasp-

ing-points upon each of its arms, thus adapting it for use where a firm and secure hold upon the article is necessary.

Reference being had to the details of the drawings: *A* designates the pillars proper, which are made in the usual form. Each of the arms is provided with the longitudinal groove *B*. *C* are supplemental arms corresponding in size and shape with the arms of the tweezers proper, and are fitted upon the inside face of each arm, being secured against lateral displacement by the lugs or rivets *D*. *E* are lugs, which are secured to the inner arms, and these lugs fit loosely within the slots *B*, and serve as handles for use in moving the supplemental arms longitudinally. It will readily be understood from the above description that the object of the invention is realized.



The following list of patents is compiled from the records of the United States Patent Office, and specially reported to THE JEWELERS' CIRCULAR.

Issue of January 28, 1890.

DESIGN PATENT No. 19,608.—BRACELET. EDWARD P. BEACH, NEWARK, N. J., assignor to Unger Brothers, same place. Application filed December 10, 1889. Serial No. 333,285. Term of patent 3½ years.

420,048.—WATCH CASE SPRING. JAMES H. FLEMING, NEWARK, N. J., Filed Oct. 20, 1888. Serial No. 288,651. (No model.) This device combines a spring having at the end thereof a lip attached to engage the cap of the watch case and having an angular lug soldered or brazed to the back of the spring, and a center support having a toe and a dovetailed notch.

420,125—WATCHMAKERS' TWEEZERS. EDGAR P. SWAIN, YAZOO CITY, MISS. Filed Aug. 21, 1889. Serial No. 321,507. (No model.) A pair of tweezers having supplemental adjustable arms.

420,289—BUTTON. WILLIAM F. WHITING, PROVIDENCE, R. I. ASSIGNOR OF one-half to Howard & Son, same place. Filed Sept. 7, 1889. Serial No. 323,278. (No model.) In a button, the combination of a head, an arm hinged to the head, an arm hinged to the head and provided with a lug or projection, and a spring bearing against the latter and notched to form three tongues, one of which bears against the first mentioned arm.

420,337—MECHANISM FOR MAKING WATCH CASE CENTERS. FREDERICK ECAUBERT Brooklyn, N. Y., assignor to Walter H. Fitzgerald, same place. Filed May 25, 1889. Serial No. 312,117. (No model.) This device consists of a sectional rotatable die which inferiorly is adapted to fit upon and around a case center and is provided with a face or with faces that are the reverse of the hinge flats of such case center, in combination with a roller that is adapted to have a rolling contact with the interior of the case-center and to press the same outward and cause it to conform to the shape of the interior of the die.

Issue of February 4, 1890.

DESIGN PATENT NO. 19,634.—WATCH CASE. THOMAS BENFIELD, NEWARK, N. J. Application filed December 24, 1889. Serial No. 334,882. Term of patent 14 years.

DESIGN PATENT NO. 19,637.—STAKING TOOL. EDWARD RIVETT, BOSTON, Mass. Application filed December 21, 1889. Serial No. 334,567. Term of patent 14 years.

420,431.—ATTACHMENT FOR SCREW DRIVERS. MARCUS J. BARTLETT, PROVIDENCE, R. I. Filed Apr. 6, 1889. Serial No. 306,191. (No model.)

420,459.—SOLDERING APPARATUS. GEORGE W. MELOTTE. ITHACA, N. Y. Filed Oct. 29, 1889. Serial No. 328,575. (No model.)

420,499.—COMBINATION SETTING FOR PRECIOUS STONES. JOHN F. MORSE, Chicago, Ill. Filed June 11, 1889. Serial No. 313,848. (No model.) An article of jewelry having a detachable screw-head or setting, combined with an automatic spring-lock for locking the parts to prevent accidental unscrewing.

420,508.—ORNAMENT FOR JEWELRY. WILLIAM BLASSING, CENTRAL CITY, Iowa. Filed Apr. 11, 1889. Serial No. 306,772. (No model.) An ornament for jewelry, consisting of a polygonal plate having a flange on one face, triangular leaves hinged to the several edges of the plate, a lug on one leaf, and a screw-cap connected therewith and adopted to hold the leaves together.

420,519.—CALENDAR-CLOCK. PETER F. NILSON, PHŒNIX, ARIZ. FILED June 10, 1889. Serial No 313,757. (No model.) A calendar attachment for clocks, consisting of the combination of a guide having one end free, a series of separate calendar cards or tags mounted upon this guide, a reciprocating main guard-plate operated by the clock mechanism for holding all the cards or tags on the guide, and an oppositely-reciprocating supplementary guard-plate operated by the clock mechanism for holding all the cards or tags but the foremost one, whereby this one, when relieved of the main guard-plate, is dropped from the guide.

420,650.—BUTTON. GEORGE E. ADAMS, PROVIDENCE, R. I. FILED OCT. 12, 1888. Renewed Oct. 29, 1889. Serial No. 328,522. (No model.) In this button there are combined arms, arbors, having pins and a pivoted bar, the whole constructed and operating to secure the corresponding simultaneous movement of said arms.

420,662—EYE-GLASS FRAME. GEORGE JOHNSTON, DETROIT, MICH. FILED May 2, 1887. Serial No. 229,441. (No model.) The combination with the eye-glass frames and their connecting spring of rigid offset arms and nose-guards engaged at one end upon the frames and at the other end having a self-adjusting engagement with the offset arms.

420,741—WATCH-BOW FASTENER. JAMES D. SHOOTS AND CLARENCE E. CARPENTER, Horseheads, New York. Filed May 6, 1889. Serial No. 309,739. (No model.) In this device the bow is provided with screw-threaded ends engaging screw-threaded lugs or ears of the sleeve or band, and a screw engaging one end of the bow and having a head bearing against one of the lugs or ears and let into a countersink in the end of bow.

420,757—LOCKET. GEORGE E. ADAMS, PROVIDENCE, R. I. FILED FEB. 28, 1889. Serial No. 301,552. (No model.) In this locket the inner frames are cut from sheet metal and have parts of the hinge thereof formed from tongues integral therewith and having lips in combination with a pintle for uniting and securing the same together.

420,874—SOLDERING TWEEZERS.—MOSES GREER, JR., KNOXVILLE, TENN. Filed May 7th, 1889. Serial No. 309,849. (No model.) Soldering Tweezers constructed with a pair of legs one of which is provided with an elongated tapering slot for receiving and holding stems of different diameters in opposition to the article held between the legs.

420,919—STEM-WINDING WATCH. JOHANN RAUSCHENBACH, SCHAFFHAUSEN, Switzerland, assignor to the International Watch Company, of J. Rauschenbach, same place. Filed Aug. 22, 1889. Serial No. 321,625. (No model.) The combination, with the winding and hand-setting wheels, of the square stem and axis having a pivot at the end and capable of receiving an end movement from the crown together with a lever acted upon by the pivot end of the axis, a lever and stud projecting therefrom, a sliding pinion on the axis for connecting the winding or hand-setting mechanism, and the springs for acting on the lever.

Issue of February 11, 1890.

DESIGN PATENT NO. 19,649—SPOON WALTER L. WILKS, BRIDGEPORT, CONN., assignor to the Holmes & Edwards Silver Company, same place. Application filed Jan. 18, 1890. Serial Number 337,386. Term of patent 14 years.

TRADE MARK PATENT NO. 17,506—FOOT-WHEELS FOR WATCHES. AMERICAN Watch Tool Co., Waltham, Mass. Application filed January 2, 1890. Used since January 9, 1883. "The word 'Webster.'"

TRADE MARK PATENT NO. 17,518—BALANCE STAFF FOR WATCHES. GUSTAVE MEINERE, Hoboken, N. Y. Application filed January 13, 1890. Used since January 7, 1890. "The word 'Safety.'"

TRADE MARK PATENT NO. 17,530—SOLID GOLD RINGS. J. R. WOOD & SONS, New York, N. Y. Application filed November 29, 1889. Used since January 1, 1884. "The letter 'W' laid on its side thus '≷.'"

420,968—ENGRAVER'S VISE OR BLOCK. HOMER U. SEAMAN, WASHINGTON, Pa. Filed April 3, 1889. Serial No. 305,880. (No model.)

420,969—ENGRAVER'S BLOCK. HOMER U. SEAMAN, WASHINGTON, PA. Filed Oct. 14, 1889. Serial No. 326,952. (No model.)

420,970—ENGRAVER'S VISE.—HOMER U, SEAMAN, WASHINGTON, PA. Filed Oct. 14, 1889. Serial No. 326,953. (No model)

421,009.—METHOD OF ETCHING AND OXIDIZING GOLD-PLATED SILVERWARE. George Myrick and William Roller, Philadelphia, Pa., assignors to Myrick, Roller & Holbrook, same place. Filed Oct. 1, 1889. Serial No. 325,671. (No model.) This method of producing in a gold-plated article on silver an ornamental design in bold relief and an oxidized background, consists in applying an acid-resistant to the article and tracing the design through the same, then immersing the coated article in muriatic and nitric acids and afterward in a bath of nitric acid, then subjecting the article to the action of a solution of platinum and muriatic and nitric acids, and then removing the acid-resistant.

421,010.—METHOD OF ETCHING GOLD-PLATED SILVERWARE. GEORGE MYRICK and William Roller, Philadelphia, Pa., assignors to Myrick, Roller & Holbrook, same place. Filed Oct. 1, 1889. Serial No. 325,672. (No specimens.) This method of treating an article in gold and silver for producing an ornamental design in bold relief and a white enameled background consists in applying an acid-resistant to the article and tracing the design through the same, then immersing the coated article in a solution of muriatic and nitric acids to cause the exposed portions of the applied metal to be eaten away, and after removing the acid-resistant from the article immersing the same in a bath of pearlash.

421,011—ATTACHMENT FOR TELOPHONES. GEORGE F. NEWLAND, DETROIT, Mich. Filed Sept. 28, 1889. Serial No. 325,385. (No model.) A telephone attachment consisting of the spring-retracted rod forked at its upper end to engage the bell-clapper and notched near its lower end to engage a projection for retaining it in its operating position, embracing the clapper until released.

421,022.—JEWELRY. DEWEY F. ADAMS, PROVIDENCE, R. I. FILED DEC. 26, 1888. Serial No. 294,691. (No model.) A breastpin, sleeve-button, or other article of jewelry having its body composed of two or more hollow or cup-shape members or parts, the adjacent sides or rims of which are perforated, and a connecting piece or pieces passing through all the perforations from

end to end of the article and soldered to the inner suface of two or more of the members, whereby the latter are rigidly connected with each other without the exposure of solder upon their exterior surface.

421,099 — Eye Glass Holder. Samuel E. Kelley, Providence, R. I., assignor to Payton & Kelley, same place. Filed Oct. 31, 1889. Serial No. 328,824. (No model.) An eye glass holder made of wire formed with two opposite hooks which are adapted to embrace the ear of the wearer.

421,136.—Link for Bracelets, Chains, Necklaces, &c. Antoine J. Kerckhoffs, New York, N. Y. Filed Aug. 12, 1889. Serial No. 320,546. (No model.) This link has the lower portion of its ends downwardly beveled and the upper portion straight and true, and is provided with a rectangular opening in one end and a tongue formed upon the opposite end, provided with a pin-opening and a curved end surface.

421,138—Calipers for fitting Watch Crystals. Andrew Nylen, Des Moines, Iowa. Filed October 12, 1888. Serial No. 287,967. (No model.) These calipers have an oblong square metal case having coinciding longitudinal slots in its top and bottom, a fixed curved lateral projection on its bottom and a fixed vertical on its top and immediately over the lateral projection, a sliding tube actuated by a spring fitted inside of the case and provided with a fixed lateral projection at its bottom and a fixed vertical projection at its top, that extends through the slots in the case.

421,301—Thimble. William W. McIntosh, Clinton, Ill. Filed Dec. 12, 1889. Serial No. 333.469. (No model.) A thimble having a partial lining extending from the base upwardly of porous elastic, and absorbtive material, as cork.

Issue of February 18, 1890.

Design Patent No. 19,650.—Fork, &c. John T. Curran, Brooklyn, N. Y., assignor to Tiffany & Company, New York, N. Y. Application filed January 17. 1890. Serial 337,243. Term of patent 14 years.

Trade Mark Patent No. 17,567.—Watches. The Illinois Watch Case Company, Chicago, Ill. Application filed October 14, 1889. Used since July 15, 1889. "The word 'Commander.'"

421,433.—Earring. Herrman Rees, New York, N. Y., assignor to Louis J. Rees and Henry P. Rees, both of same place. Filed Mar. 1, 1889. Serial No. 301,644. (No model). An Earring comprising a curved ear wire having a knob at its upper end, a locking bar hinged to the lower end of the wire and provided with an eye for engaging the upper end thereof, the bar being provided with a laterally projecting stud below the eye, and a keeper pivoted on the stud and provided with an arc-shaped slot for engaging the knob, one end of which is enlarged.

421,438.—Spectacle Case. Fisk Shailer, Chester, Conn. Filed Sept. 6, 1889. Serial No. 323,153. (No model). A spectacle or eye-glass case provided with a wiper in the form of a tongue extending outside the case.

421,487.—Grinding and Polishing Apparatus. William J. Fisher, Newark, N. J. Filed Sept. 4, 1889. Serial No. 322,987. (No model.)

421,530.—Time Alarm. George H. Straight, Kingston, R. I. Filed Aug. 13, 1889. Serial No. 320,587. (No model.)

421,585.—Refracting Lens. Wilhelm Kochs and Max Wolz, Bonn-on-the-Rhine, Prussia, Germany. Filed Dec. 12, 1888, Serial No. 293,394. (No model.) Patented in Germany, July 29, 1887, No. 42,818. A refracting-lens consisting of a round glass body, tapering at one end, slightly curved and provided with an eye-piece.

421,615.—Bracelet. William Riker, Newark, N. J. Filed May 24, 1889. Serial No 311,941. (No model.) A bracelet comprising an open ring with ends lapped past each other side by side, and united by eyes rigidly secured to the ends, one end being formed with side projections, the other forming a lateral spring section acting substantially at right angles to the plane of the bracelet for holding the eye in engagement with the side projections.

421,623.—Time-Stamp. Charles H. Shaw, Brooklyn, N. Y. Filed July 13, 1889. Serial No. 317,380. (No model.)

421,622.—Clock Escapement. Mathias Schwalbach, Milwaukie, Wis. Filed Feb. 26, 1889. Serial No. 301,195. (No model.) In a clock, the combination, with the pendulum of a scapewheel loose on a revolvable shaft and having one face thereof provided with a series of pins for engagement with the pendulum, pins arranged at intervals on the opposite face of the scapewheel, a coil spring connecting the scapewheel and shaft, a pivoted elbow lever arranged to have its free end in the path of the latter pins, a pivoted gravity arm normally rested upon the elbow lever, and a series of arms corresponding in number to the latter pins and rigidly connected to the shaft to alternately come in contact with the gravity arm at predetermined intervals.

421,779,—Spectacle Frame. William X. Stevens, Washington, D. C. Filed June 27, 1889. Serial No. 315,740. (No model.) The combination of a spectacle frame having open-ended rims adapted to be closed together in the form of journals, and bows having bearings fitted to the journals.

421,831.—Ruby Pin Setter. Louis W. Greb. Canton, Ohio. Filed July 27, 1889. Serial No. 318,852. (No model) A jewel-pin setter consisting of a flat disk-shaped body having the heat-conducting extension at one edge and diametrically opposite the extension an open-ended slot, the hollow or chambered handle connected to the body with its chamber in line with the slot, the spring-pressed slide engaging the slot and having a cylindric portion or shank arranged within the chamber of the handle, and the manipulating arms projecting from the slide and through slots in the handle, this slide having its tongue provided with a central end notch, and a slot contiguous to said notch.

421,844.—Repeating Mechanism for Watches or other Timepieces. Fred. Terstegen, Elizabeth, N. J. Filed Apr. 23, 1884. Serial No. 128,899. (No model.) In repeating watches, a repeating mechanism placed on one surface of the time movement, having separately operated racks engaging the hammers to strike the hour and its divisions and driven by a special spring, in combination with the snails driveu by the mainspring of the time movement.



French Exposition in London.—French merchants established in London, as well as those resident in France and standing in commercial relation with Great Britain, intend to hold an Exposition in London this coming Spring, on the model of the Italian Exposition held there in 1888. The Minister of Commerce of France has promised his aid in furtherance of the enterprise.

Glass Balance Springs.—A. L. Berthoud sends to the *Revue Chronometrique* a note stating that in view of the endeavors at present made to find a substitute for steel for balance springs, it is perhaps interesting to examine the rate of a chronometer made by Arnold & Dent, furnished with a glass spring. The rate table of the Greenwich Observatory is appended. To which Mr. Saunier replies that "glass is a material consisting of several ingredients of varying proportions; this is the reason why there are so many kinds of glass. The only kind however, interesting at all to the watchmaker, is the spun glass." He next specifies the mode of manufacture, which is irrevelant in this place, and continues. The experiment of Mr. Dent is very interesting, but we do not know whether it has been repeated; we have however no confidence whatever in balance springs made of glass. This composition alters under certain gases as well as humidity; and it is especially effected in localities continually hot. To this fact is believed to be due the occurence that watch crystals, although not subject to any friction or wear, become often so opaque that it is necessary to repolish them in order to restore their transparency.

Marvelous.—The precious stones contained in the Museums of London, Paris, Vienna, and St. Petersburg, have a value of over five millions of francs; Think of it, an interest of three hundred millions (francs) is lost annually simply for the sake of feasting the eyes. The Sultan of Turkey possesses the throne of Keilabin, a name given to Cambyses, a mythological personage, to the Turks. It is entirely of gold, enameled and encrusted with pearls, rubies and emeralds; there are, besides this, two etnis (cases) made of rubies and diamonds which are destined to receive the hairs of the head of the prophet.

Public Clocks in Berlin.—The commission for the establishment of public clocks in Berlin recently held a meeting. The Central Clock Company sent in a petition to be allowed to set up twelve other clocks of the Mayrhofer's system, with the proviso that the city try them for one year, after which they are to be paid for. The petition was received, and it was resolved to permit the Company to set up experimentally twelve of these clocks. It was furthermore resolved to set up six candelabra clocks.

Electrical Clocks.—The University of Göttingen intends to establish a comprehensive electrical net of public clocks. The observatory is to be furnished with a large electrical standard timepiece, which is to be superintended by the officials of the observatory. From there a large network of electrical wires will radiate through the streets of the city, and actuate dummy clocks in every part; the steeple clocks also will be included. Public clocks will be set up on the street corners, to be propelled by the same motor. Private citizens also may receive the time if they so desire. The German will finally learn that time is money, and that the day dreamer will be left behind in the race to get ahead of time.

Pedlars of Jewelry and Watches.—German Watchmakers and jewelers have united in fighting against the traveling vendors of watches and jewelry. They have resolved, however, that legislation can do but little for their relief, and that it is best to fight the evil simply by societies, unions and public opinion. Alas, these good people do not know that Mr. Peter Funk's stores and sales will be patronized, no matter how often people are swindled.

TRADE GOSSIP.

—A. Hodenpyl, of Hodenpyl & Sons, 170 Broadway, New York, sailed for Europe on Feb. 15th by *La Bretagne*.

—Fred. G. B. Weihe, Ocala, Fla., has moved his business from the west side of the Public Square to Union Block, into Van Pelt & Co.'s old store,

—August Goldsmith, for the past ten years connected with the house of Stern Bros. & Co., New York, has been admitted to an interest in their business.

—The Rogers & Hamilton Co., the plated ware manufacturers of Waterbury, Conn., supplied the silver plated ware for the recent great ball of the four hundred in New York.

—The Meriden Britannia Co., last month, re-elected their old board of directors and officers. Simpson, Hall, Miller & Co.'s officers for the coming year are also the same.

—Robert Wallace has been re-elected president of the R. Wallace & Sons Mfg. Co., Wallingford, Conn.; W. J. Leavenworth, Treasurer, and F. A. Wallace, Secretary and General Superintendent.

—The horological school of W. F. A. Woodcock, at Winona, Minn., is meeting with flattering success, new pupils arriving every week. This is one of the oldest and best schools of its kind in the country.

—Among the vice-presidents of the World's Fair Meeting which was held in the hall of the Cooper Union, on the evening of Feb. 17, were Chas. L. Tiffany, Joseph Fahys, Edward Holbrook, and Chas. W. Schumann.

—Owing to the removal of the division offices of the Union Pacific R. R. from Wamego, to Junction City, Kan. W. S Lydecker, licensed watchmaker of the railroad, will on March 1, move to the latter town as well.

—Wm. M. Friedlander has commenced business at 39 Nassau street, New York, as watch repairer and adjuster. He makes a specialty of complicated work, and inserts cylinders, staffs and pivots for the trade.

—J. B. Wood, buyer for Charles F. Wood, 169 Broadway, New York, arrived last month from Europe, on the steamer *Teutonic*, having purchased in the European markets a very large stock of gems and precious stones.

—Isaac Valentine late with F. Jeandheur, Jr., 6 Liberty Place, New York, is now manager of the Empire Gold and Silver Plating Works, 75 & 77 Nassau street. They make a specialty of all kinds of coloring, gilding and plating.

—The published report that Joseph H. Horton, 64 John St., New York, had last month a closing out sale, has proved erroneous. Mr. Horton says that he only sold out some very old stock, and that he doesn't propose to quit business.

—Hipp. Didisheim, importer of watches, 83 Nassau st., New York, sailed for Europe on Feb. 8, by the steamer *La Normandie*. Mr. Didisheim purposes an absence of two months and will make St. Imier, Switzerland, his objective point.

—The prize to the woman voted by the readers of the *New Yo k Journal*, to be the most popular in New York—a wreath of solid silver and filigree work fashioned in most beautiful manner—was designed by P. Hartmann, 36 Maiden Lane.

—J. F. Fradley, D. P. Mygett and Franklyn M. Matthews have formed a company under the laws of New Jersey to be known as J. F. Fradley & Co., for the manufacture of walking sticks, umbrellas and jewelry. The concern will be located in Newark, N. J.

—The Meriden Silver Plate Company, last month, re-elected their old board of directors. George R. Curtis is President, Robert H. Curtis, Secretary and Treasurer, and W. R. Mackay, Superintendent; the remaining directors are J. C. Lewis and George H. Wilcox.

—Giles Bro. & Co., Chicago, Ill., are putting their time system, including their celebrated "anti-magnetic" shield, on the Western Indiana railroad. The Iowa division of the Northwestern make the statement that the average variation of time of this system is but one-half second per day.

—Hippolite C. Rosswog, of the late firm of C. Rosswog & Son, died on Feb. 8, aged thirty-two. The young man had been bedridden for almost a year, and his death was expected at any moment.

—The T. G. Hawkes Company, of Corning, N. Y., has been incorporated with a capital stock of $50,000 for the manufacture and sale of cut and engraved glass. The incorporators are Thomas G. Hawkes, Oliver F. Egginton, Henry P. Sinclair, Jr, Ellsworth D. Mills and Charles A. Vorhees.

—Theodore Richrath, for some years a popular salesman with Sexton Bros. & Washburn, New York, has engaged to travel for William Downey, diamond jeweler, 24 John street, succeeding Sidney White. Mr. Richrath will call on the trade in Boston, Baltimore, Washington, Philadelphia, and the west.

—A skillful watchmaker expired recently in the person of L. Berger, who, for one and one-half years, was employed by Oscar Heyer, Wilkesbarre, Pa. He had, previous to coming to America, worked in the city of Morocco. The deceased was 32 years of age, and leaves a wife and three children unprovided for.

—Geo. Wm. Smith, of Rolla, Mo, has sent out broadcast a circular wherein he claims that his system of electoral ballot voting invented in 1882 is identical with the so-called Australian system, or rather that the latter is identical with his system, for he says his invention was perfected before the Australians were allowed to vote.

—The increasing demand for the Webster-Whitcomb lathe has caused the American Watch Tool Co. to add a Brünard milling machine to their lathe department. Seventy-five men are now employed by the company, thirty-five being on watchmakers' lathes, turning out 5 per day, the balance being on machinery for the Otay and foreign watch companies.

—On another page of this issue will be found a cut of a magnificent shooting trophy made by E R. Stockwell, 19 John street, New York, for the Atlantic Ammunition Co. Mr. Stockwell is as well equipped as anybody in the jewelry business for the satisfactory performance of all such special order work as this, and retailers who receive orders for badges, medals, trophies, etc., of any kind, are advised to correspond with him.

—The American Watch Tool Co., Waltham, Mass, have added a special milling machine to strengthen their Webster-Whitcomb lathe department. The company's output of watchmakers' lathes has reached No. 5771, while that of the "Webster" foot wheel has reached No. 2478. The company have completed and shipped to Mermod Freres, musical box manufacturers at St. Croix, Switzerland, an entire equipment of tools and machinery; they have also shipped a large quantity of machines to the new Lancashire Watch Co., England, and are now at work on machinery for the Elgin Watch Co.

—R. Blackinton & Co., North Attleboro, Mass., are showing a very handsome line of samples of their bright cut silver work that was so favorably received last season. Bar pins and buckles of mother of pearl with applied bright-cut ornamentation; hair bands of tortoise shell similarly ornamented, and a variety of novel patterns in twisted wire bangles having as pendants, balls, acorns, hearts, etc. in bright-cut silver, are among the most striking novelties. They have also prepared a large assortment of lovers' lockets for miniatures, heart-shaped, oval and round and both plain and ornamented. This house sells only to the jobbing trade, and retailers who desire a selection of these popular goods should send to the nearest jobber for them.

—St Albans has been selected for the establishment of an industry which, says the *St. Albans Messenger and Advertiser* of recent date, although unobtrusive, is quite important. Three years ago experiments were made here by Mr. J. K. Nye for a New Bedford oil house, on a method of refining porpoise jaw oil by subjecting it to the low temperature that the winter season at this point affords. The experiments proved highly successful and St. Albans was selected as the best point for further operations. Mr. Nye has returned here each winter, bringing each time a larger supply of the crude oil. He rents one corner of the old rolling mill and carries on his experiments there. From the place of its refinement the name "St. Albans oil" has clung to it, and it is now ordered from every part of the globe under this name. After treatment in this cold climate these oils become very delicate and valuable and are used exclusively on the delicate mechanism of timepieces and electrical instruments. The experiment bids fair to become quite an important winter industry for our town.

—Henry Goll & Co., watch-case makers and repairers, of Liberty Place, New York, are quite busy at this season, both upon special ordered work and upon repairing of damaged cases; in the latter branch of their business they have taken a leading position and can be depended upon in every respect.

—Harry R. Smith, an old-time jeweler of Cincinnati, formerly of the firm of Beggs & Smith, and at present in business for himself at 6 West Fourth St., has been appointed a trustee of the Cincinnati and Southern Railroad. It is a life position, one that will not interfere with his regular business and will pay him we are informed about $2,000 per annum.

—It will pay jobbers to handle the goods (jewelers and watchmakers' signs and emblems) made by E. G. Washburne & Co., as they can be depended upon both for quality and finish, are made of material that will stand the weather, and will preserve their original appearance for a number of years. The manufacturers' address is 46 Cortlandt St., New York.

—Mr. George F. Kunz, the gem expert with Tiffany & Co., has been appointed special agent in charge of the department of precious stones of the Eleventh United States Census. Mr. Kunz will collect all the statistics in reference to the production of precious stones in the United States as well as those in relation to the cutting of diamonds and other foreign stones.

—F. H. LaPierre, 18 East 14th st., New York, inventor and manufacturer of the celebrated "Shakespeare Bracelet," states that the demand for these goods continues to tax his facilities to the utmost. He is preparing to prosecute to the full extent of the law all infringers of his rights, and the retail trade will avoid complications by purchasing the "Shakespeare" of him only.

—J. H. French, the widely-known auctioneer, during the past month conducted the auction sale for D. W. Granbery & Co., dealers of fancy goods, bronzes, etc., at 189 Broadway, New York. Remarkably good prices were obtained throughout, and the sale proved very successful. Mr. French, recently, successfully conducted the sales of the burnt-out stock of Simpson, Hall, Miller & Co., New York and the bankrupt stock of David Mayer, Hartford, Conn.

—A. Bantle of 89 Nassau st., New York, whose name should be well known to our readers as he has continuously advertised in THE CIRCULAR for many years, reminds his customers and the trade in general that he still continues at the old stand. In addition to electroplating, he produces fine results in Etruscan coloring and oxidizing, and bronzing metallic goods. Promptness in filling orders, superior workmanship and moderate charges, are Mr. Bantle's methods.

—Trade is unusually brisk with E. & J. Schweikert, of Cincinnati, O., in their tool and material department, although there is no dulness to be found in any part of business. They are constantly adding new customers to their list, who find them prompt and reliable in filling their orders with the best grade of goods. They make a specialty of W. B. & Co. watch glasses and Whitcomb lathes, and carry also a full line of material for American watches, including the new 0 and 1 size, and of the Trenton, Cheshire and Waterbury makes.

—The annual meeting of the stockholders of the Derby Silver Co., Birmingham, Conn, resulted in the choice of the following officers: Watson J. Miller, President and Manager; Wesley L. Clark, Secretary and Treasurer; and Edward N. Shelton, George W. Cheeseman, Aaron R. Smith, Wm. E. Downes, W. J. Miller and T. H. Newcomb, Board of Directors. The business of the past year, under the able management of Mr. Miller, has been highly satisfactory, and the prospects for the ensuing year were never brighter for the company.

—In a special article on the Camera Club of Hartford, Conn., published in the Connecticut edition of a recent issue of the *New York World*, space was given to a pen portrait and notice of T. Sedgwick Steele, of the old jewelry house of Steele & Son. About two years ago Mr. Steele, then composing the firm, retired from business to devote himself to artistic pursuits, in which he has attained considerable success. He is an artist with the brush as well as with the camera, having been admitted to the National Academy of Design of New York, in 1877. He is also the author of "Canoe and Camera."

—The affairs of the Wiesbauer Mfg. Co. have passed into the hands of a new management whose purpose it is to continue the business under improved methods. A change of corporate name is contemplated. At the annual meeting of the stockholders on Feb. 3, the following officers were elected: J. M. Bostwick, President; M. Doll, Vice-President; H. C. Balcom, Secretary and Treasurer, and P. H. Danner, Superintendent.

—Simpson, Hall, Miller & Co. have taken temporary quarters at 80 University Place, New York, next door to the old store, recently burnt out, and now undergoing complete reconstruction. It is the intention of the management to have the architectural features of the remodelled store of unusual excellence. At the factory work on the fall styles has already commenced, and it is expected that for that reason a large number of new designs will be displayed.

—R. & L. Friedlander, 65 Nassau street, New York, are making extensive alterations in their watch and jewelry department. Miss Kutzlib, heretofore their cashier, has been promoted to the superintendency of the jewelry department. The firm are now represented on the road by Abe Harris, Louis Moss and Ed. Kornfeld, who are now out in their several territories. In the early part of the month Abe Harris was presented by his employers with a valuable solid gold watch, as a token of their appreciation for the hard work he had done for the firm during 1889. Watchmakers and jewelers who may have new inventions of interest to the trade, should communicate with R. & L. Friedlander. This firm issues a very elaborate catalogue which can be had upon application.

—Bowman & Musser, Lancaster, Pa., have made extensive improvements in the past eight months in their building, increasing their capacity over three-fold. They took in the adjoining building, putting an addition to the rear of the united buildings, and entirely altering the interior on each of the two floors and basement. They built a large three-story vault, with openings on each floor, to hold surplus stock. The heavy cabinets used are on castors and at night are run into the vaults from the store-rooms. In addition to these vaults they have a twenty ton and an eight ton safe outside. The main room is handsomely fitted up, iron grilles being largely and effectively used, and the entire building in arrangement and finish, is one of the most convenient and complete in the wholesale trade.

—The Waltham School of Horology, Waltham, Mass., of which D. D. Palmer is the proprietor and principal, starts out upon its second term of the year under most favorable auspices. The attendance has more than doubled and Mr. Palmer is carrying on a voluminous correspondence with applicants in all parts of the country. Before the middle of the term, many new pupils are expected to arrive. To keep abreast of the increase in attendance Mr. Palmer is adding new branches of instruction and making many improvements in his equipment. He is prepared to furnish instruction in engraving to all who may desire it. He has also opened a night school for instruction in special branches of the trade such as adjusting, regulating, etc. To accomodate the increased number of pupils, he is contemplating the erection of a wing to the present building to be fitted up as a school and workshop. He has almost entirely recovered from the effect of the painful accident to his shoulder, which deprived him of the use of his arm for some months.

—The management of the Chicago Horological Institute, of Chicago, Ill., are meeting with the success they richly deserve in catering to the wants of the student of horology. Their efforts in the direction of elevating the standard of workmanship among the watch repairers of this country are praiseworthy and they seem to be appreciated, judging from the large number of students they have in attendance, reaching into the sixties, and from the fact that it has been found necessary to double the seating capacity of the Institute within the last two months. The Institute is so located that they have plenty of room at command. Last year its rooms were full and all the students who went away, spoke of it in the highest terms of praise. Many of the old students will return this Spring, those who could not stay to graduate last year. This school seems to have taken a front rank, and it is not a matter of wonder, when we consider that it furnishes everything that is of the best in the way of equipment and instructors. Four of the latter are now in attendance upon the students, all men of acknowledged ability and superiority in the horological world; and we take pleasure in recommending to the trade at large an institution that is so ably conducted in every respect.

—Lew Mendes, of D. De S. Mendes & Co., diamond importers, cutters and polishers, 49 Maiden lane, New York, is on his usual spring trip through the west.

—G. L. Cobb, of Attleboro, Mass., F. E. Hanson, of Portland, Me., and E. W. Bradley, of Emporium, Penn., are new pupils at D. D. Palmer's horological school, Waltham, Mass.

—The Pairpoint M'f'g Co., New Bedford, Mass., will soon place before the trade, a line of seamless, hollow-handled flat ware, patented, and claimed by the company to be superior to anything of the kind heretofore produced.

—Fred. M. Day. who recently started a horological school at Oxford, N. C., reports that the progress made since January 1st exceeds his expectations. He now has a number of pupils under his instruction, some of whom have spent several years at the bench.

—Cross & Beguelin, 21 Maiden Lane, desire to call the attention of the trade to their large and carefully selected stock of timers in nickel, silver and gold, both plain and split seconds. The demand for these goods is so brisk that they find it difficult to fill their orders.

—The gem screw-driver, shown in the advertisement of A. J. Logan, is claimed to be superior to anything of the kind in the market. The grooves being screw-formed, exert a downward pressure upon the driver as it is turned by the hand and thus facilitate the work.

—Henry E. Oppenheimer & Co., 47 Maiden lane, New York, are reaping the benefits of the competition of some months ago, for the best single stone ring mounting. They have now ready for the spring trade a number of attractive novelties, combining the best designs offered.

—The purse novelty recently placed upon the market by the S. Cottle Co., 860 Broadway, New York, has already proved very successful. The colors of silk, of which the tops are made are enumerated on page 61. Dealers should send for one of the manufacturers' illustrated circulars.

—Henry Troemner the manufacturer of jewelers' scales and balances, 710 Market street, Philadelphia, is engaged on two colossal balances of 10,000 ounce power, which were recently ordered by the Secretary of the Treasury for use in that department. These are the largest balances ever constructed for such a purpose.

—Wm. H. Jamouneau, president of the Alvin M'f'g Co., 24 Boudinot st., Newark, N. J., sails for Europe on the 5th of March, by the German-Lloyd steamer, to be absent about two months. He will combine business and pleasure and on his return the trade will no doubt find that he has used his opportunities to good advantage.

—J. Eugene Robert & Co., 30 Maiden lane, New York, agents for the celebrated Agassiz and Longines movements, make a specialty of 16 and 18 size movements, open face and hunting, which are thoroughly adjusted for accurate time and railroad use. In chronographs, split seconds and minute repeaters they offer a large stock of very desirable goods at moderate prices.

—Albert Lorsch & Co., importer of diamonds, precious stones and imitaton stones, 37 Maiden Lane, New York, are the sole owners and importers of the "Sumatra gem," which they claim is unequaled in brilliancy and hardness, and which retains its lustre in wear. They say it is the nearest approach to the genuine diamond yet discovered. A. Krower, of the firm, sailed for Europe on March 1st.

—Sussfeld, Lorsch & Co., importers of optical and mathematical instruments, 13 Maiden Lane, New York, notwithstanding the prevailing dullness of business last month, were very busy. They have received large new lines of spring novelties in opera glasses, etc., and have increased all their lines. R. Staedele, European buyer for the house, will return from Europe on March 3, by the *Aurania*. He will undoubtedly bring numerous things with him which it will pay jobbers to inspect.

—Owing to increase in business, F. P. Locklin & Bro., of 206 Canal st., New York, were obliged to seek larger quarters and will, on or about April 1, remove to a large and commodious building at No 63 to 71 Clymer street, cor. Kent avenue, Brooklyn, where with improved machinery and larger facilities they will be enabled to promptly fill all orders for the large share of the trade in their line with which they are now being favored. They will also have a New York office. This firm manufactures a superior line of gold and silver headed canes and umbrellas.

—Sexton Bros. & Washburn, 41 Maiden Lane, are greatly pushed to supply the orders for their "Magic Nut," the merits of which are becoming generally recognized. This house carries a line of diamond and fancy rings, scarf pins, which for richness and excellence of workmanship are unsurpassed.

—Josiah Cummings & Son, 109 Summer street, Boston, Mass., are becoming headquarters for jewelers' sample trunks. Their patent steel trunk, illustrated on another page of this journal, is the lightest and most durable thing of the kind that the jewelry traveler can possibly have. The demand for these trunks as well as for their large line of linenoid trunks and sample cases, is increasing rapidly among thetrade.

—Ketcham & McDougall, 198 Broadway, New York, the mention of whose name at once suggests the word "thimbles," have just produced two handsome silver novelties in that line. In these the bands are oxidized, and are of scroll pattern, beautifully chased or plain. In the manufacture of thimbles, this firm stand perhaps unrivalled. They are ever producing new patterns which unvariably combine beauty and taste, and the quality of the goods is always sterling and what it is claimed to be.

—F. H. Mathez, of Mathey Bros., Mathez & Co., 15 Maiden Lane, New York, arrived from Europe on Feb. 15th, after a three months' sojourn abroad. He reports that the firm's factory at Brassus, Switzerland, is running to its utmost capacity, turning out a full line of complicated watches—the firm's specialty—which enables this house to compete with any other in the same line. Though it is quite difficult to obtain the skilled labor required in the manufacture of such fine goods the firm manages to constantly increase the force of workmen.

—James S. Knowles. who for the past twelve years has basked in the balmy clime of the Land of Flowers for S. Myers & Co., 48 & 50 Maiden Lane, is again visiting friends in that section and is meeting with his usual success. Of the other travelers of this house, M. S. Weand has just started for his bailiwick (Pennsylvania), A. S. Nelson is in the west, M. Landman is scouring the east, while Robert Crippen is covering the middle states and the Mississippi valley, P. T. Hollins looking after the interest of his firm in New York state, and Julius Goldsmith is tending to the city trade. The firm report that the year has opened up with fair prospects (not World's Fair), and confidently expect to exceed their last year's sales.

—Class pins and rings are at present engaging the special attention of Henry C. Haskell, Corbin Building, New York. He has prepared four neat circulars, on which are impressed numerous patterns in these goods, besides designs of rope, knot, serpent and other fancy rings. The former goods are made in gold, while the latter are made in gold, silver and gold and platinum. Mr. Haskell will be happy to send these circulars to any dealer. They are valuable as an advertisement in a jeweler's window, and also to give customers a good idea of what obtainable in the classes of goods they display. Mr. Haskell, whose business is varied, recently made for a Western dealer a large and extra heavy medal, to be awarded the victor of a pool tournment. The appropriate ornamentation was green table enameled with 16 diamonds representing the balls. The sale of the famous "razzle dazzle" puzzle ring still continues unabated, and in his other lines, silver bangle bracelets, paper knives, combs, glove buttoners, book marks, etc., Mr. Haskell is doing a very satisfactory business.

—The representative of the CIRCULAR, in his round last month, found the attachés of the Spencer Optical Co., 15 Maiden Lane, New York, extremely busy. By the removal of Byron L. Strasburger, who for years occupied its rear portion, the Spencer Co. now occupy the whole store, 100x25 feet in dimensions. This good space is still hardly sufficient to accommodate the ever-increasing business of the company. The remarkable progress which the Spencers have made and which is frequently food for comment, demonstrates what will accrue to a house which caters to the wants of their patrons. One cause of their success is claimed to be their principle of manufacturing all the goods they handle and selling them direct to retailers. A specialty of their make, which every first-class dealer seems to think a necessary adjunct to this business, is a trial case, the frame of which being made of either aluminum or celluloid, is of one-half the usual weight and very handsome. This trial case is being adopted by the large institutes of New York, among them being the New York Ophthalmic Institute, the largest of its kind in the country. The company are twenty-five orders ahead in this specialty alone.

—The new factory of the Gorham Mfg. Co. is now completed, and several of the rooms have been occupied. The carpenter shop is in operation, and the machine shop is now being removed to its new location. Preparation is being made to occupy the entire factory during the spring.

—Hunt & Fuller, 73 Nassau street, are making a specialty of mystic shrine badges and masonic emblems of all kinds. They are ready to furnish designs and estimates upon application, and also to execute satisfactorily any special order or repair work they may be called upon to do.

—On another page will be seen an elegant specimen of artistic pen drawing, the advertisement of the Leroy W. Fairchild Co., manufacturers of pens, pencils, novelties, etc. The work is the production of one of the company's own designs, and shows the same artistic talent seen in their goods.

—The Essex Watch Case Co., Newark, N. J., have moved into their commodious new factory in the Krementz building, on Chestnut street. One of the incidents of the removal was a shop-warming, including a banquet, sociable and dance in the upper floor of the building. About eighty covers were laid, and after the inner man had been satisfied, speeches were listened to from both employers and employees. The spirit of solidarity and good will manifested by all is most creditable to the management of the business and is a good augury of future success. The new shop is now nearly complete in all its details, and when in thorough working order, the company will be in a position to satisfy the growing demand for their goods.

—The R. Wallace & Sons' Mfg. Co., Wallingford, Conn., have moved into their new salesroom, at No. 3 Park Place, New York, where they will have greater advantages for the display of their large line of goods of all kinds in sterling silver, plate and nickel silver. The floor is handsomely tiled and the hard wood cases that line the walls and extend through the center of the show room are of the rich and substantial appearance that only the firm of B. & W. B. Smith, the artistic cabinet makers of 220 West 29th street, New York, can furnish, and in these are exhibited in elegant plush boxes all the varied articles and patterns of the company's manufacture, in sterling silver and silver plate. This great improvement in the New York salesroom will give the company better facilities for meeting the demands of their metropolitan trade and is but an indication of the general growth and prosperity of this enterprising concern.

—The first months of the year being a season of banquets, dinner parties, etc , the principal feature of the silver plated ware trade, is the demand for candelabra. Rogers & Bro , 16 Cortlandt St , New York, had prepared for the emergency an unusually large assortment of these articles in various and attractive patterns, with three, four and five lights. We understand that it is the intention of this concern to drift gradually away from the manufacture of oxidized goods, for which, during the past three years, there has been so large a public demand. This demand not only applied to silver and plated ware, but extended to goods made of cheap material and sold to the fancy goods and hardware trade. Lately however, the fashion has come to be applied to so common a class of goods that the demand for articles of fine grade in that style of decoration has somewhat fallen off, and manufacturers of the better class of plated ware find it to their interest to gradually drop as far as they are concerned their production. Now plain finish is being applied to almost every line of plated-ware.

—The latest novelty in head ornamentation in the line of jewelry is, undoubtedly, also the most beautiful. It is a dainty tiara or Florentine fillet, not of the heavy and ponderous class worn by ladies of royalty and fashion in the European countries, but of a light and graceful character. It is intended to encircle the head above the forehead, being held securely in place by two safety hairpins attached to its ends by delicate chains. Rich, beautiful, conveying the impression of a miniature crown, perhaps nothing in the line of jewelry for ordinary wear has been produced to excel it. This elegant novelty is made in numerous designs in 14-k. gold or sterling silver, and with or without gems. As a birthday or wedding gift it is especially appropriate, and no surprise would be elicited, if a craze for them were excited among ladies of fashion. John A. Riley, 860 Broadway, New York, is the manufacturer. The scarf holder which Mr. Riley placed upon the market some months ago, has proved very successful, and is now regarded as a staple of his business. During the present year an increased demand is anticipated.

—Changes and improvements are in process at the factory of the United States Watch Co., Waltham, Mass., which will insure a fall delivery of more than 200 movements a day.

—Smith & Knapp, 182 Broadway, New York, are preparing a neat and complete price list of American movements and cases, which will be ready for distribution by April 10. It would undoubtedly pay dealers to have one of these lists.

—The United States Watch Co., Waltham, Mass., announce that the 6 size hunting movement from 7 to 16 jewels, gilded and nickel, which they placed on the market the last fall has literally "won the the hearts of the trade," and in order to insure delivery in quantities for the fall trade, dealers are requested to send in their orders at once.

—The travelers of Aikin, Lambert & Co., are now out in their respective territories and are meeting with fair success. In the pen department the firm are especially busy, the new patent pen which they recently placed on the market having won immediate recognition from the trade. The advantages of this pen may be briefly stated as follows: A largely increased surface for retaining ink by means of a matted or granulated scrface on the inner surface of the pen; better adhesion for holding ink; less liability of dropping ink; a more uniform flow of feed and a better spring for action. These pens will always retain their adhesive qualities and never become smooth like the common pen, which is simply abrased or very slightly roughened by a scouring process, and by little use and frequent wiping becomes perfectly smooth, both inside and out, entirely obliterating all adhesive qualities and causing a dropping of ink. By the new process of Aikin, Lambert & Co., the matted or granulated inner surface being produced by compression, prevents the gold from spreading while under pressure, hence a greater density of metal is obtained and a more uniform thickness of nibs than can be produced by the antiquated way of hammering, where the hammer blows are unequally distributed over the surface and tends to spread the gold without sufficiently hardening it.

—The copartnership of Pforzheimer, Keller & Co., the well-known jobbers of watches, diamonds and jewelry, was dissolved on Feb. 12, by the withdrawal of Isaac Pforzheimer. The business will be continued by the remaining partners, David Keller, Isaac B. Ettinger and Henry J. Fink, under the firm name of Keller, Ettinger & Fink. The house was established in 1870 by Isaac Pforzheimer, David Keller and Henry Dreyfus, under the title of Pforzheimer, Dreyfus & Keller. The partnership remained unchanged until 1875 when Mr. Dreyfus withdrew, the remaining members continuing under the title of Pforzheimer & Keller until 1880, when, by the admission of Mess. Ettinger and Fink, the style was changed to Pforzheimer, Keller & Co. During the twenty years' career of the house, they have always occupied the quarters at 24 John st., New York, and have always carried the same class of stock, strictly first-class goods in every respect. During their existence it has been their business standard never to misrepresent goods, to handle nothing but honest stock, and to merit the confidence of the trade by straightforward dealings, hence the reputation of this house stands second to none. The new firm will undoubtedly retain the good will of the trade. I. B. Ettinger, H. J. Fink, H. Heyman and George Peacock represent the firm on the road.

—The old established house of Miller Bros., Newark, and 37 Union Square, New York, has been dissolved by mutual consent after a partnership extending over a period of twenty-five years. Isaac M. Miller the junior partner retires and the senior member, James W. Miller, will carry on the business, retaining the same office and factory and assuming the entire management of affairs. Although still a comparatively young man Mr. Miller can boast of an expierence of nearly forty years in the manufacturing jewelry business and his inventive genius has been largely instrumental in giving to the late house of Miller Bros. the enviable reputation it enjoyed for originality and fertility in all the lines of its manufactures. Mr. Miller is the originator and owner of a number of inventions that have proved lucrative to the firm. The successor of so highly esteemed and prosperous a firm, and the possessor of abundance of capital and a ripe experience, we can safely say that a good name has fallen into good hands, and prophesy still further successes for the house. Isaac M. Miller, the retiring member of the firm, will enjoy the leisure to which an ample fortune and a quarter of a century of business activity entitle him. A trip to the Pacific coast and a continental tour will be among the diversions which he promises himself in the near future, and while at home his famous span of roadsters will no doubt be in frequent use.

—Charles Jacques, importer of clocks, 2 Maiden Lane, New York, returned from his European trip on Feb. 9. Since then, he

has been arranging plans for the present year, occupying himself especially upon a catalogue, which for completeness of representation of the class of goods he handles, and for magnificence of make up, will exceed anything of its kind ever produced. In fact, nothing of its kind has ever been produced. In the first place all the illustrations will be in beautiful photogravure style, which in many respects exceeds the real photography, and will be impressed upon fine supercalendered paper. The catalogue will contain styles of imported clocks that have never been represented in such a volume, a full line of carriage clocks occupying one page, gilt regulators another, fancy clocks another, and the remaining pages being devoted to representations of onyx clocks, marble clocks, gilt and enamel cloissonné sets, sevres sets, English mantel and hall clocks, cockoo clocks, faience clocks, brass clocks, etc.; and one page will be devoted to clock material of every description. From this volume the jeweler will be enabled to select anything he may desire in the line of imported clocks without going to Europe. This catalogue, as the reader may see by referring to Mr. Jacques advertisement, will be sent only upon application. Mr. Jacques has leased from May 1, the entire store, of which he at present occupies about one-half.

Among the Watch and Clock Companies.

—The Waterbury Watch Co. are turning out 1,500 per diem.

—The Rockford factory is to be very much enlarged the coming spring.

—F. S. Baker has been appointed general selling agent for New York city of the United States Watch Co., Waltham, Mass.

—In a Chicago supplement to an issue of *Harper's Weekly* last month was contained a good cut of the Elgin factory over a sketch of the same.

—The Chicago store of the Seth Thomas Clock Co. will soon be moved to 149 & 151 State street, into the spacious quarters recently vacated by Theodore Kearney.

—The new machine department of the Elgin factory will be largely devoted to repair work, while the old or main department will perform new or special work.

—Secretary Knight, of the Rockford Watch Co., reports during the thirteen years his company has been in business it has paid out for labor the vast sum of $1,430,314.17.

—Mechanical Superintendent Marsh, of the American Watch factory, has perfected an automatic hair spring stud machine, which is a marvel of ingenuity, and is a wonderful labor-saving device.

—The machine shop and flat steel department at the Hampden factory are to be enlarged at once, the demand for the company's watches having increased beyond the most sanguine expectations of the officials.

—The management of the Hampden Company, with the intention of providing the factory with standard time, have had installed in the factory a clock with telegraphic connection with the naval observatory at Washington.

—The water gas furnaces recently installed in the dial room of the Elgin factory are proving their own utility by standing continuous use. They are used day and night, but when additional furnaces can be put up, night work will cease.

—The citizens of Pueblo, Col., are now anxious to have a watch factory, reports saying that they are ready to subscribe $500,000 to start such an enterprise, and to pledge themselves to make the capital stock $2,000,000 after one year's time.

—It is estimated by the *Watch Dial* that some of the small sized watches which have been offered to the trade during the past year have cost their manufacturers in tools, machinery and advertising not less than $1,000 for each movement produced.

—The entire plant of the old Hampden Watch Company at Springfield, Mass., consisting of three acres of land with buildings capable of accommodating 700 workmen, boilers and engine, main shafting and gas plant, sufficient to supply 1,000 lights, is offered for sale.

—The Rockford Watch Co. have established offices at London and Paris, and will soon cover Rio Janeiro, Buenos Ayres and the principal South American points. Offices for the display of the goods will also be established at Hamburg, Berlin and Liverpool.

—Report says that the Sterling (Ill.) clock and watch works have begun operations in a small way; that machinery is being put in place and about twenty-five hands are at work, and that the superintendent expects to have two hundred persons at work three months hence.

—The Keystone Watch Company of Lancaster, Pa., will hold a meeting, April 14, for the purpose of increasing the capital stock, in order that additional buildings and machinery may be added to the plant, to meet the increasing demand for goods. Important changes in the officers are in contemplation.

—The Soho clock factory (W. F. Evans & Sons), Birmingham, England, at present has on hand more orders for grandfather clocks than it can turn out. It has just shipped to Philadelphia, Pa., clocks to chime on four gongs and eight bells, and the firm have an United States order for forty-five clocks with brass dials.

—The annual report of the New Haven Clock Co. was filed last month by Hiram Camp, President, and F. E. Morgan, Secretary of the corporation. The document shows that the paid up capital of the company is $200,000; the cash value of its real estate, $250,000; personal property, $300,000; bills receivable, $340,000; indebtedness, $687,000. The stock is divided into 8,000 shares.

—On the evening of Feb. 8, at the Quincy House, Boston, Mass., the directors of the E. Howard Watch and Clock Company, gave a complimentary dinner to their foremen, over which Samuel Little, the president of the Company, presided. After partaking of an elegant repast, speeches were made by Mayor Hart, Gen. John L. Swift, Albert Howard, general manager of the company, and others.

—The foremen of the different departments of the American watch factory enjoyed a dinner on the evening of Feb. 8, at the Woodland Park Hotel, at Auburndale, Mass. Covers were laid for twenty-four. After the banquet cigars were lighted, and speeches were in order. Superintendent Fitch's remarks were received with great applause, and a generally good time was enjoyed by all. The Waltham band furnished delightful music.

Attention is called to advertisement of the E. N. Welch Manufacturing Co. and the Boston Clock Co. on the first page. Owing to the large increase of business in the lines of both these companies, it has been found necessary to place samples and stock at the different salesrooms named in the advertisement. The trade are cordially invited to call and see the very many new and elegant patterns now on exhibition in the different establishments specified.

—The Waterbury Watch Co are issuing to dealers a unique advertising conceit in the shape of an identification card. On one side of the card are blank spaces where the possessor may inscribe points of identification, while the other contains an appropriate advertisement of the Waterbury Watch, and a space for the dealer's name. Being a useful little article, the customer is more apt to keep it than if it were an ordinary business announcement or card.

—The current report of the removal of the Rockford factory to the other end of the town finds some corroboration in the fact that a real estate syndicate in which Henry W. Price, president of the company, is interested, offers to build the company in the extreme northwestern portion of the city a mammoth factory, capable of accommodating 1,200 hands. As the company is to enlarge its factory in the near future, it is stated that it will probably accept the offer.

—S. T. J. Byam, ex-superintendent of the Trenton factory, left for Liverpool on Feb. 19, to examine the works of the new Lancashire Watch Company, who have introduced American machinery with a view to making watches on the American plan. Mr. Byam has had the position of superintendent of the works offered to him, and he will determine as to its acceptance. He was accompanied by C. J. Hewitt, of the new company, who had visited America to order machinery and tools.

—Report from Otay, Cal., says that work at the watch factory is progressing in a timely and systematic manner, many bench lathes and other watch machinery having been completed. A new toolroom has been constructed on the first floor, and is now well stocked with the various requisite tools. Operatives are now employed night and day pushing the work. A large consignment of watch machinery recently arrived from the east. Report says that the company began the manufacture of movements on Feb. 6.

—A. C. Smith has severed his connection with the Non-Magnetic Watch Co. of America and is making preparations to soon place on the market, a line of 18 size full plate movements of American make,

containing the Paillard non-magnetic balance and hair spring. These movements will be made both nickel and gilt in 11 and 15 jewels and 15 jewels adjusted, and will be a very superior watch. Mr. Smith's long connection with the watch trade has won for him hosts of friends who will be pleased no doubt to learn of his new connection.

—During the past month the American Waltham Watch Company issued to dealers a circular, in which it was announced that the Waltham ladies' movement in 1 and 6 sizes would thenceforth be offered to the trade independent of the cases, at the established price of movements; and that in the future all ladies' cases in silver, gold-filled and gold would be filled at competitive prices. It is, however, understood that the company does not engage to deliver separately any ladies' movements to be cased in any other cases than those made by the Waltham and Crescent Companies.

—The Keystone Watch Co., Lancaster, Pa., has shut down some of its departments, and is concentrating all its force on a new full plate movement which is to take the place of the three-quarter plate movement now made under the patents of A. Bitner, the ex-superintendent. Several weeks will be consumed in getting out the new movements, the models for which are being constructed after the ideas of the present able superintendent, H. J. Cain, and will embrace a hunting case full plate, an open face and a ladies' watch. The latter will be made a specialty, the company expecting to turn out fifty a day when the factory is in full blast again. Under the efficient management of the present superintendent the prospects of the Keystone Co. are very bright, and when the new goods are placed upon the market, it is the intention of the management to crowd on the steam and run to their fullest capacity.

—On Saturday, Feb. 15th, a motion was made before Judge Dykman at White Plains, N. Y., to continue Chas. S. McCulloh as receiver of the Non-Magnetic Watch Co., of America. The motion was granted on the 19th inst., and Mr. McCulloh is now in full charge of the company's affairs, with whom all communication relative to past or future business must be had Mr. McCulloh has brought suit against Aeby & Co., of Madretsch, Switzerland, for upward of $70,000 for moneys loaned them by the Non-Magnetic Watch Co. Under this suit an attachment has been issued and levied upon Aeby & Co's property in New York. A. C. Smith, for years favorably identified as selling agent, has resigned his position. The commercial part of the business will be conducted by Mr. McCulloh under the same rules as in the past, prices remaining unchanged, and all orders will receive prompt attention.

—The stockholders of the Hampden Watch Company held their annual meeting at the Massasoit Hotel, Sprinfield, Mass., on Feb. 4th and elected John C. Dueber president, in the place of Charles D. Rood, who was formerly president and treasurer, and who was re-elected treasurer and director; James D. Safford was elected auditor and John C. Dueber clerk. The directors are: John C. Dueber, Charles D. Rood, Aaron Bagg, Jr., F. N. Leonard and F. H. Harris. An eight per cent. dividend was declared and paid, and the company's affairs were stated to be in a very prosperous condition. The works at Canton now employ over 1,000 hands and turn out 600 watches a day, more than double the product when the works were in Springfield. Mr. Rood in an interview said that he had not bought the Aurora (Ill.) watch works, and probably would not get them, although negotiations were in progress. He stated that he wanted the works as an investment, and had no intention of moving the plant to Springfield.

—The New Haven Clock Company, after a year or two of experiment, have at last perfected a piece of mechanism which, if it does not realize the desire for perpetual motion, seems at least a step in that direction. They are now manufacturing and about to put on the market a self-winding clock. The motive power is furnished by electricity generated by two Leclanche cells, which do the work effectually for from twelve to eighteen months without renewal. The mechanism is simple in the extreme. Much of the ordinary clock is omitted, and little remains save the escapement wheel. The clock is wound every hour by a current from the two cells of the battery working through a pair of magnets. The main wheel, which revolves once an hour, connects the current at every revolution. When the contact is first made and the current passes through the magnets the armature is pulled down to the magnet heads, drawing with it an arm which winds one tooth of the ratchet wheel, which is fastened to a box containing a spring of the finest steel attached to the center pinion. The operation is repeated for five or ten seconds at the rate of three blows second, until the spring is wound and the current cut off by the passage of the main wheel.—*Hartford Times.*

Grey's Elegies.

Some diamond brokers have a precious stony look.

"That man is in the jewelry business," whispered a gentleman to his friend, as a stranger in their pew at church put a five-cent piece into the collection plate. "How do you know?" asked the other. "Don't you see he is a nickel-plater?" was the reply.

The most comfortable kind of sleeve link to wear this season is your best girl's arm when out walking.

"Strange, is'nt it," said Belle to Adolphus, "you will always notice that when a man is in evening dress, his vest buttons are the most intelligible part of him."

"His vest buttons! For the land's sake how do you make that appear?"

"Why easily enough. You know they are always under-stud." And Adolphus was almost tempted to break off their engagement.

When the opera's first act was over,
The young lady looked up in doubt,
To find that her escort and lover
Had put on his hat and went out.
When he came back, she said "from your breathing
I fear you've been drinking, alas!"
But he answer'd—his face in smiles wreathing
"No—I've just had an opera glass!"

After all, the average watchmaker has no fixed political principles of his own. He is a regular time-server.

JOHN S. GRAY.

On Time.

PEARL EYTINGE.

Where is my watch?—amid the lace,
The brushes, ribbons, gloves and rings,
In ev'ry nook, in ev'ry place,
I've searched among my myriad things.

I shall be late—I'm sure its stopt,
Where can it be? What is the hour?
I wonder if it could have dropt
Behind that tiny floral tower?

With pouting lip of rosy hue
The maid sinks in her cushioned chair,
And picking up a satin shoe,
Inserts her silken foot with care.

But, hist! what sound upon the ear,
Falls dread as ever churchyard chime,
The crystal's crushed, but *one thing's* clear.
It has not stopt—It's *set on Time.*



VOLUME XXI. NEW YORK, APRIL, 1890. No. 3.

THE JEWELERS' CIRCULAR
AND
HOROLOGICAL REVIEW.

OFFICIAL REPRESENTATIVE OF THE JEWELERS' LEAGUE, THE NEW YORK JEWELERS' BOARD OF TRADE, AND THE JEWELERS' SECURITY ALLIANCE.

It is also the Recognized Exponent of Trade Interests.

A MONTHLY JOURNAL DEVOTED TO THE INTERESTS OF WATCHMAKERS JEWELERS, SILVERSMITHS, ELECTRO-PLATE MANUFACTURERS, AND THOSE ENGAGED IN THE KINDRED BRANCHES OF ART INDUSTRY.

SUBSCRIPTION.—To all parts of the United States and Canada, **$2.00 per Annum,** Postage Paid. To all Foreign Countries, **$3.00 per Annum,** Prepaid.

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189 BROADWAY, NEW YORK.

☞ *Advertising rates made known on application.*

GOSSIP OF THE MONTH.

☞ A full Index to Advertisements and a Table of Contents will be found on Page 5 of this issue.

Subscribers will do a favor by notifying us at once upon the non-receipt of any number of THE CIRCULAR. The mails will occasionally miscarry, but we will cheerfully make good Uncle Sam's little shortcomings by sending another copy to replace any missing one.

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THE JEWELERS' CIRCULAR commences this month the publication of a serial article under the caption, "The Chronometer Escapement," contributed to its pages by the celebrated horologist, Richard Lange, of Glashutte, Saxony, whose name will be as familiar "as household words," to the majority of its readers. The article may be objected to by some on the ground that it is too theoretical. There may be some truth in this view, but the era of theory in the art of horology is about to dawn here in the United States, and the old rule of thumb worker of yore will be under the disagreeable necessity of seeing his place filled by the more modern watchmaker, who has been trained to combine practice and theory. Some years ago, when the founder of this journal broached the idea of starting a horological school to several of the leading watch dealing firms of New York, his suggestions were simply laughed at as Utopian and impossible to carry out. Time, however, is demonstrating the truth that they were not, and it is enough to make the true watchmaker's heart glad to look over the list of the excellent horological schools that are already organized in the various parts of the country. It has been the steadfast endeavor of this journal to lead in matters horological, and these institutions of learning have justly claimed a large share of our attention. The present utilitarian age dispenses more and more with the small tradesman, and seeks to manufacture every line of goods in large factories; auxiliary machinery is invented and introduced; the article once manufactured by one tradesman, now requires, say, ten men, but these ten men are now no longer watchmakers, goldsmiths, casemakers, etc., but by the division of labor, have become machines tending machines. The very act of thinking is no longer permitted them, but is done by their iron counterpart, or at least by its inventor, who supplied it with motions, that dispense with the thinking of the human attendant. But as the architect requires masons to carry out his imaginations in brick and stone, so also does the mason need the architect for providing him with these imaginations. The builder or inventor of a horological machine adapts it to an idea already conceived—incorporated. But that idea is centered in, and based on theory; theory sketched the watch, with all its wheels and pivots and pinions; it supplied the wheel with teeth and the pinions with leaves, and that theory can at present be taught only and alone in a horological school, and will never emanate from the brains of a rule-of-thumb worker, who may be an excellant repairer at the bench, but will never be a Berthoud, Breguet, Grossmann, Tiede, Lange, Harrison, Dent or Arnold. Time was when this theory was to a certain extent taught to the apprentice, but it is passing away, and he who desires to acquire all the mysteries of the art, must be prepared to enter on a course of study at such an institution of learning. Swayed by these considerations, THE CIRCULAR cheerfully finds room for the article, and hopes that it will awake a new line of thought.

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Don't talk too much in trying to sell goods.

*** *** ***

OUR esteemed contemporary, the *Manufacturing Jeweler*, takes exception to some editorial remarks in the last issue of THE CIRCULAR, on the tariff reform as affecting the watch manufacturing industry of this country, challenging our assertion that a judicious modification of our tariff schedules would increase our exports of watches Without taking the space to give a full exposition of the subject, we will simply say in defense of our position, that all trade is an exchange of the products of labor; the present high duties, particularly on many of the articles used as raw materials by our manufacturers, divert a large amount of trade to other shores, these raw materials finding other markets where they can be more advantageously exchanged. If we were in a position to take more freely

of the materials needed in our manufactures, we should give in return for them more of the things we excel in producing, one of the chief of which is watches. The watch industry has been wonderfully successful in this country, and a considerable export trade has already been built up in this line. We acknowledge it and are proud of it. But there is always room for improvement, and in the benefit of any policy looking toward the increase of our foreign trade the watch *manufacturing industry must necessarily share.* It is not because we are unmindful of the present achievements of the American watch companies that we favor this policy, but because we feel confident that only under more reciprocal relations with foreign countries, such as Mexico, West Indies, Australia, and the South American peoples, can they gain the full recognition to which their ingenious methods and colossal plants justly entitle them.

*** *** ***

"The Chronometer Escapement" by Richard Lange, the eminent German horologist, begins in this issue. Invaluable to the advanced student.

*** *** ***

ACCORDING to the New York *Tribune*, the Ways and Means Committee in their struggles over the revision of the tariff, have entertained a proposition to increase the duty on diamonds to 40 per cent. After the storm of protestation that greeted the announcement of such a possibility two years ago, it seems rather like obstinacy or even stupidity on the part of our legislators to tamper with the question again. A little investigation would have been sufficient to convince them that as subjects of taxation diamonds present peculiarities so great as to entitle them to entirely separate consideration. A commodity so valuable and so small in bulk that $1,000,000 worth can easily be secreted about the person is not such a bonanza for the tax gatherer as may appear at first blush to the uninitiated. In fact, experience has shown time and again that the larger the tax on diamonds the smaller the revenue derived from it. The present duty of 10 per cent. offers premium enough on smuggling, honest dealers having too feequent cause for complaint. With a 40 per cent. duty honest importers would have to go out of business entirely, and join the great army of inspectors that would have to be retained by the government in the futile attempt to run down this ignis fatuus of a 40 per cent. tax on diamonds. All to no purpose. The diamond business would degenerate into a contraband trade, and the most successful importers would be simply blockade runners. Five minutes' conversation with anybody who knows the facts would have shown our well-intentioned legislators the utter absurdity of the idea. We write this protestation not in fear that the Ways and Means Committee will even seriously entertain such a proposition, but in surprise that it was ever broached by them. But perhaps our astute Solons are indulging in a little humor to lighten the arduous labors of tariff revision. If so, we understand them, and appreciate the joke.

*** *** ***

If you have a case in Optics that puzzles you, write it out for Dr. Bucklin's department of THE CIRCULAR, *send it in and you will get an answer.*

*** *** ***

UNDER the heading "Gentlemen Wear no Jewelry," the New York *Sun* of March 16 publishes what purports to be an interview with a prominent retailer of the metropolis, in which the latter is reported to have said that gentlemen have given up the fashion of wearing jewelry. No better illustration could be given of the inaccuracy of the daily press when it ventures out of its chosen field of personality and sensation. Whether anybody at all was "interviewed," or if so, whether the person interviewed was a retail jeweler or not, we do not know. But as to his prominence we can say most emphatically that he has at least two characteristics that are prominent—ignorance and stupidity—and if his name had been mentioned in connection with such drivel it would have impaired his credit forever. People who cut their own throats are called suicides, and while, if the victims alone are affected, no feelings but wonder and pity may be aroused, the case becomes more serious when the innocent are obliged to bear a share of the consequences. The publication of such false statements is a menace to the whole jewelry trade, a blow given in the house of a friend—and the only redeeming feature about it is that there isn't a word of truth in it. If any one doubts it let him use his own eyes in the street and in the social circle, and he will soon become convinced that so far from being on the wane, the custom of wearing jewelry is more pronounced than ever among gentlemen. Diamond, fancy and seal rings, scarf pins, charms and fobs are essentials of masculine adornment now, and, of better omen still, a general taste for the rare and the curious in gems and jewelry bears witness to the sincerity of the revival. Some years ago errors of this kind were of frequent occurrence in the daily newspapers, owing to the fact that the reporters or special writers would not or could not take the time to investigate the truth of their sweeping assumptions, and the effect upon the public was most discouraging to dealers in jewelry. A vigorous campaign of education begun and carried on by THE JEWELERS' CIRCULAR and other trade papers has had the effect of checking this abuse of journalistic power, and settling the question of jewelry fashions. The old error seems to be persistent, however, even enlisting the services of those who ought to know better than to give it aid and countenance.

Don't Talk Too Much.

THE above advice is well conveyed by a little dialogue recounted by one of the prominent retail dealers in a western city. It puts the case in a way that will bear repetition. Being asked how business was by a member of one of the houses with which he was dealing, he said: "Bad. We tell our customers too much. Why, a fellow comes in here from up in the backwoods. He's made a little money, and he wants to buy a watch. So he goes into the first store on the street and says he wants to buy a watch.

'What kind of watch do you want, silver or gold?'

'Are there two kinds of watches?

'Oh, yes.'

'Well, I guess I want a gold watch.'

The dealer produces several gold watches and begins to explain the difference between them. This is a forty pennyweight case and this a fifty pennyweight case.

'Oh! are there more differences in watches?'

After learning this much the inquirer concludes that he will call again, and passing on to the next store asks to see a forty pennyweight gold watch.

Retailer No. 2 concluding that his customer knows something about watches, makes up his mind to show him that *he knows more* about them.

'Cylinder or lever escapement?'

'Are there different escapements?'

'Oh, yes;' and dealer No. 2 proceeds to deliver his customer a lecture on horology.

The latter becomes more and more confident of his own ability to judge a watch and a harder man to sell in consequence.

After pumping No. 2 dry he goes to No 3, and asks to see a forty pennyweight gold watch, lever escapement.

Dealer No. 3 concludes that the man must be a Saunier or a Grossmann in disguise, and when he is through with him the greenhorn from the rural districts knows nearly all there is to know about a watch, and decides to look further. By the time he gets through the street he has taken a great deal of valuable time, has got quite an insight into the absorbing subject of horology, and has bought no watch. The best plan to pursue is to offer your customers a good article and bend all your energies to the selling of it, instead of confusing them with a mass of gratuitous information that can cause nothing but indecision."

The moral is plain and should be heeded by the retail trade. Don't talk too much.



*A Complete History of Watch and Clock Making in America.

[By Chas. S. Crossman.]

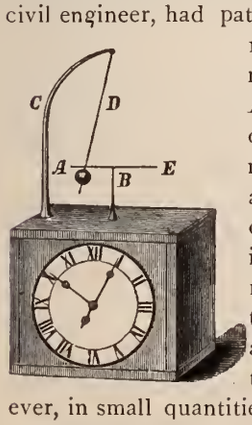
Number Forty-two.

Continued from page 74, March, 1890.

CLOCK MAKING:

MAJOR TIMOTHY AND ABIEL CHANDLER, CONCORD, N. H.

The Chandlers, as the above two gentlemen were often collectively designated, were famous clockmakers in that part of New Hampshire in which they had their home. Major Timothy Chandler was born in Concord in 1760. With whom he served his apprenticeship we do not know, but he appeared as a clockmaker there in 1785. He of course followed the old methods and made the old style of English high case clocks for many years. His son, Abiel Chandler, was a more progressive spirit, and also of superior mechanical and scientific attainments as well, and it is of him we wish to speak more particularly in this sketch. He was born in 1807 and learned the trade in his father's shop, and very early developed a natural taste and ability for mechanical work. He was not contented to work in the old ways where he thought there was a chance for improvement, and was always ready to try a new way if it looked reasonable. Shortly after being admitted to partnership with his father in 1829, he went to Boston to learn to make the Willard timepiece, which had then become popular. After working there about six months he returned and devoted his time to making this pattern of clock. He built up a large trade, keeping a number of workmen in his employ on this branch of the work. He took a great labor-saving step by building a wheel cutting engine. This machine, with a number of cutters, is yet in existence, and bears witness of his success in saving labor by using proper tools Continuing in this work he also added the making of regulators and siderial clocks, as the Connecticut clocks had about killed the trade in clocks made in the old way. Major Chandler, the senior member of the firm, was getting too old to take an active part in the business, and he retired from it a few years previous to his death, which occurred in 1846, at the ripe old age of eighty-six years. Abiel Chandler also extended the business in other directions, a growing demand for mathematical instruments leading him to take up their manufacture also. Previous to giving up clock making, however, he developed the Briggs Patent Flexible Pendulum Clock in 1858 and 1859, which Mr. John C. Briggs, a civil engineer, had patented in 1855. We give a cut of it. *A* represents the pendulum ball suspended from a rigid and permanent arm, *C* by a thread, *D*. *B* represents a spindle with a cross arm fimly connected with the spindle. This spindle is made to revolve by a clock movement below and carries the pendulum with it, theoretically, of course, swinging in the same time whether in a larger or smaller circle, according as it runs fast or slow. In practice it was found that the clock stopped very easily if jarred, and Mr. Chandler gave up the idea of making them to any extent. They were made, however, in small quantities by other parties afterwards. He devoted much of his time in later years to experimenting on compensating pendulums and double pendulum regulators. The two last instruments that he finished were transit instruments, one of which was made for Messrs. Monill Bros., of Concord, and the other for Mr. William Turner, of Wheeling, W. Va. These instruments were designed for accuracy in preference to outside show, but were very satisfactory in both respects. He died April 22, 1881, leaving two sons, neither of whom succeeded him in his business.



* Copyright by Chas. S. Crossman, 1885.

SIMON WILLARD, THE VETERAN CLOCK MAKER OF MASSACHUSETTS.

Among the New England makers the name of Simon Willard is probably at the head, although he lived at a somewhat later date than others who have been mentioned. The writer is of the opinion that no better sketch of Mr. Willard can be prepared than is given in a paper by Edward Holden, which was read before the New England Historical Geological Society on September 2, 1857, and from this are gleaned the facts of his life.

"He was born at Grafton, Mass., April 3, 1753, and was the seventh son of a family of twelve children His father was a farmer. Simon in his early boyhood entered the public school of his native town, where he took to the study of mechanics and began soon to kindle the fire of mechanical genius, whose latent heat had already well nigh burst into a flame. His father, disposed to encourage his well-meant design, at the early age of thirteen placed him under the instruction of Mr. Morris, an Englishman, who was a neighbor, and at the time engaged in manufacturing clocks. Simon at once found himself in his natural element, and so early did his genius develop itself that the brief period of twelve months had not elapsed when he had succeeded in constructing a complete and perfect clock, which was at once pronounced superior to those produced by his master. It is said of him that diffidence, if not bashfulness, was a marked characteristic of his youth. So strongly was this developed, that when sent to the village store to make an ordinary purchase he would pass the door several times before assuming sufficient boldness to enter and make known his errand. This feature, assuming the form of modest reserve, continued a distinguishing trait in his character during his life. At the same time it is to be observed that this element detracted nothing from his skill as a mechanic, for the exercise of his brain in planning and his hands in executing works worthy of his genius was his daily delight. He was naturally of an industrious turn of mind, and devoted but little time to public matters. When the country issued its first call to arms, on April 19, 1775, he individually responded, going to the rendezvous in his working clothes. He served for a period of about two years, and at the end of that time was honorably discharged. He removed from his native home in Grafton in 1780, and established himself in Roxbury street, Boston, opposite the present locality of the old Clock Dial (an old landmark), erected by him, now nearly three-fourths of a century ago. His first wife died at an early age, leaving one son. He married again, June 23, 1788, and became the father of eleven children by his second marriage.

"The general court of Massachusetts granted him the exclusive privilege of manufacturing his patent clock jack for a period of five years. This was approved by Gov. John Hancock, July 21, 1784. Mr. Willard then gave himself entirely to the manufacturing of ordinary eight day high case clocks, until he patented his famous timepiece in 1802. The estimated number of eight day clocks made by him is twelve hundred, and of timepieces about four thousand. He made many improvements in tower clocks, affording 'striking' evidence of his skill and taste in their construction. The public clocks at our National capitol, at Harvard University, and at Jefferson College in Virginia, were made and put up by Mr. Willard. Mr. Jefferson, having heard of his mechanical ability, sent expressly to him from Virginia to make a large clock for his college, and expressed himself as being very much pleased with the work when done. Mr. Willard visited him several times subsequently, one visit giving rise to an anecdote which, although published several years since, will bear repetition here without apology. Mr. Jefferson had talked freely with

Mr. Willard about the effect of a treaty that had been recently made by Jno. Jay. Mr. Willard could give no opinion upon any of its provisions, and told Mr. Jefferson that he knew but little of public affairs. During the succeeding conversation President Jefferson begged Mr. Willard to examine a beautiful French clock and see what was the matter with it. Mr. Willard took out his tools and separated the various parts of it. The conversation ended, Mr. Willard arose to go. 'Don't go,' said Mr. Jefferson, 'until you put the works of the clock together,' to which Mr. Willard replied, suggesting that the President should do it himself. 'But, I cannot,' replied his astonished listener, whereupon Mr. Willard smilingly said: 'if you cannot replace the simple works of a clock how can you expect me to be able to talk intelligently on the subject of treaties.' In 1835, at the age of eighty-two, he made with his own hands a large clock for the capitol at Washington, and during his visits there received the most marked attention from the heads of departments, being in fact looked upon by them as a great man, though the sphere of his greatness might have been deemed more humble than their own. They venerated him for his old age, while they respected him for his talents; and had they known him in his social and private character, they would have admired him for those rich manifestations of heart which adorn the man and the Christian. He had much to do with the designing, making and perfecting of the machinery for the revolving lights on the United States Coast.

"He also made several musical clocks, playing seven tunes each. The inventive genius of Mr. Willard is evident in the cabinets of philosophy and astronomy at Cambridge, Mass., a large share of the philosophical apparatus now (1857) in use bearing marks of his wonderful power in this direction. It is said that Joseph Pope, the inventor of the orrery, after having devoted several months in endeavoring to discover and remedy an error in its construction, was compelled to abandon it as imperfect. When it was shown to Mr. Willard his keen, perceptive and ready skill at once discovered the defect and rectified it. Among the last tower clocks he built was the one in the old State House on State street, Boston, which he put up in 1831. Mr. Willard early became a visitor at the houses of the Presidents and many of the Professors of Harvard College; indeed, he was the familiar friend of five successive Presidents of the University, who delighted to give him full credit for his rare qualities of head and heart. The perceptive faculties of Mr. Willard were retained to a remarkable degree to the last year of his life. At the age of eighty he was able to read without spectacles. He was a man of the utmost simplicity of character, with a benignity and equanimity seldom equaled. Kindness, humanity and charity characterized all his social relations. In business Mr. Willard's desire seemed to be that whatever work passed from his hands should be well done. The end for which most people work was to him a secondary consideration. If he had had less integrity and honor, and more of the "main chance" in his disposition, he might have left more gold in the bank. He died in Boston, September 20, 1848, aged ninety-five years, without pain or suffering. In the expressive language of his physician: 'The wheels of his time had ceased to revolve, not because they were not carefully oiled, for they continued to receive every attention which anxiety, skill and perseverance could bestow, but because their pivots had become so worn in their sockets, and their periphery so smooth, that no further repairing could make them act reciprocally upon each other, and for a longer time keep up the motion of life.'"

There was one of his tower clocks in old St. George's Church in Beekman st., New York. It was made by Mr. Willard in 1815, and for many years kept the standard time of the city. In those old days a man with the most unpretentious watch would vow that he had "Old St. George's time," and as probably a minute or two was not regarded as much as a second is now by those carrying fine watches, it would do very well for them to make such an assertion. Mr. Williard made 1,200 of the high case or English style clocks and 4,000 of the timepieces which are still made in essentially the same form by one of the large clock companies. His shop on Washington street, Boston, was for many years the largest clock factory in the United States. The cases for most of his clocks were of cherry and were made in an adjoining shop under the superintendance of his brother.



[From our Special Correspondent.]

Boston, March 20, 1890.

The spring trade promises well.

The Credit Jewelers' Association will hold its annual election of officers on April 7 at the Boston Tavern.

John A. Remick leaves Boston for Europe on May 17.

Mayor H. N. Fisher, of Waltham, will on April 1 resign his position as foreman of the escapement department of the American Watch Co.

At a February meeting of W. S Crown & Co.'s creditors, it was decided to look into the affairs of the concern through a committee. There seemed to be a satisfactory surplus of assets over liabilities.

The recent sentence of 25 years in State Prison which Kelly, the jewelry store robber, received is severe but well merited. His was the first indictment and conviction under the habitual criminal act and he pleaded guilty of the crime charged. His fate ought to make these prisoners who are awaiting trial for the Charlestown assault and jewelry robbery shiver in their boots at the prospect before them.

Farrington Ross bought a watch here recently on the installment plan. He pawned it in Providence, R. I. The courts of that State have decided that the pawnbroker had no claim on the watch, the loan or the interest on it. It is an important decision.

Paul Newman has opened a store at 330 Washington street.

Floyd, Pratt & Rounds are making alterations to their store, and are in the midst of carpenter's sawdust, pipers' steel filings and tangles of electric wires. They have removed the private office to the other end of the store. This gives them more light in the front of the store. Then a gallery, broad and roomy, has been built along one side and across one end. This will be used principally for storage, though a few cases may be kept there. Incandescent electric lights replace the old gas fixtures, and when all is finished the store will be much improved. Three men are out sick, though not seriously so. Some changes in the personnel of the office will be made soon.

Mr Charles Harwood, of the firm of Harwood Brothers, started March 10 for a trip to California. He went on a Raymond excursion by way of New Orleans, and will not be back till July. He may go to Alaska before he sees Boston again.

Mr. Poor, of Shreve, Crump & Low's jewelry department, says they have had a good trade, though nothing remarkable or very heavy. Boston ladies have begun to emulate the old Roman matrons, and now wear gold fillets on the head and across the forehead for evening dress. Mr. Poor says these are selling very well.

The heart-shaped jewelry is all the rage now in Boston. It is made in any variety of shapes. One of the prettiest and best selling is the heart cut from a single large moonstone, and bordered by smaller moonstones or pearls. Then there are the two hearts interlaced and the bow knot of gold ribbon with a pendant heart, which makes a pretty present for a young man to give to his sister or some other fellow's sister. One of the prettiest novelties in the necklace and bracelet line is the gold woven work which has such wonderful elasticity. It fits close to the neck or arm, almost like a dog-collar, and is very popular.

Leon.

OUR TRADE ORGANIZATIONS

THE JEWELERS' LEAGUE.

THERE were present at the regular meeting of the Executive Committee of the Jewelers' League, held on the evening of March 7, Messrs. Howe, Greason, Bardel, Jenks, Houghton, Untermeyer and Sexton.

Dr. W. H. Farrington, of the Astor House, was appointed additional examining physician for New York City. Four requests for change of beneficiary were granted. Eleven applications were referred for various reasons, and the following applicants were admitted to membership:

John J. Barnes, Phila., Pa., recommended by Chas. H. O'Bryon and Bernard Levy; Sol. Bergman, Omaha, Neb, recommended by Otto Heeren and J. W. Senior; Geo. Boehmler, Phila., Pa., recommended by Simon Muhr; W. H. Bovard, Manayunk, recommended by Chas. L. Scherr; Alexander Brownley, Ailsa Craig, Ont., recommended by W. K. McNaught; Wm. S. Cary, Montclair, N. J., recommended by Chas. F. Brinck; Henry M. Demarest, Plainfield, N. J., recommended by J. R. Greason and C. F. Pierce; Henry W. Fishel, New York City, recommended by J. W. Senior and J. M. Dayton; John U. Garver, Carthage, Mo., recommended by Frank Bigley; John W. Graham, Phila., Pa., recommended by Simon Muhr; Marcus Herzfeld, Alexander City, Ala., recommended by Ben. Spier; Walter B. Hood, Albany, N. Y., recommended by H. M. Jacobson; Noble H. Howe, Phila, Pa., recommended by J. W. Shuler and W. A. Weidersheim; Thomas W. Latermer, Phila., Pa., recommended by F. B. Gilbert; Jules A. Levy, Phila., Pa., recommended by Geo. W. Scherr; Louis G. Levy, Phila., Pa., recommended by Geo. W. Scherr; Arthur P. Lewis, Phila, Pa, recommended by J. H. A. Davisson; Isaac Loeb, Selma, Ala., recommended by J. L. Schweizer; Salomon Steiner, Hartford, Conn., recommended by Frank Leventhal; Arthur J. Tomlinson, New York City, recommended by G. E. Marcus and G. B. Jaques; Henry M. Valentine, Brooklyn, N. Y., recommended by H. C. Ostrander and C. G. Lewis; August Weber, Phila., Pa., recommended by J. F. Thomas; Alfred F. Wise, Brooklyn, N. Y., recommended by A. W. Sexton and J. F. Saunders; F. B. Woodruff, Southington, Conn., recommended by Joseph F. Ward.

THE JEWELERS' SECURITY ALLIANCE.

THE regular monthly meeting of the Executive Committee was held at the Alliance office on Friday, March 14. There were present Henry Hayes and David Untermeyer, Vice Presidents, J. B. Bowden, Chairman, Chas. G. Lewis, Treasurer, Messrs. White, Kroeber, Butts and Secretary Hodenpyl.

The following applicants were admitted to membership: Geo. E. Blanchard, East Greenwich, R. I.; Clemens Hellebush, Cincinnati, Ohio; Julius Kahn, Milwaukee, Wis.; D. C. Land, Chicago, Ills.; Martin Luther Richter, Madison, Ga.; Russell & Lyon, Jacksonville, Ills.; J. G. Willeke, Springfield, Mo.

THE JEWELERS' AND TRADESMEN'S COMPANY.

DURING the last month the following named have been admitted to membersihp.

Henry Ansley, Ruskville, Md.; Addison A. Betts, with A. Hoyt, Stamford, Conn.; Martin Caulfield, Charleston, S. C.; Jesse M. Connelley, Charleston, S. C.; Joseph L. A. Fowler, with Fowler Bros., Providence, R. I.; Oliver P. Schneeweiss, with E. G. Webster & Son, Brooklyn, N. Y. And the following from New York City: James S. Beatty, with Walter Doughty; John C. Downing, of Downing, Keller & Co.; Charles J. Evans; Hamline Q. French; Isaac H. Frothingham, with United States Express Co.; Max Klein, with M. B. Bryant & Co.; Constantine Lucius; Conduce G. Megrue, with Aikin, Lambert & Co.; Ernest Machenbach, with C. M. Von Bauer; James A. Rierdon, with E. W. Jones; Louis Edward Smith; Robert Sutter, with Daft Co.; Edwin F. Thistle, with E. W. Jones.

The third death which has occurred in the membership during the three years in which the Jewelers' and Tradesmen's Company has been in existence, was that of Jesse A. Reed, late with A. Hoyt, of Stamford, Conn., on February 20. Proofs of his death were presented and approved on March 4, and a check for the amount due his beneficiary, his widow, was paid on the same date, and very flatteringly acknowledged by her.

ST. LOUIS RETAIL JEWELERS' ASSOCIATION.

ON MARCH 2, the retail jewelers of St. Louis, Mo., held a meeting in a hall at 620 Locust street, and effected a permanent organization.

The following agreement was signed by all in attendance:

"We, the undersigned, do hereby agree to form an association to be called the St. Louis Retail Jewelers' Association. The aim and objects of this Association shall be to promote social intercourse among the craft; adopt such measures as may from time to time be essential to further the interests of the trade, and when deemed proper to incorporate under the laws of the State of Missouri."

The election of officers resulted as follows: President, Herman J. Oberschelp; Vice-President, J. Ryser; Secretary, R. Jaegermann; Treasurer, F. H. Niehaus.

A few days after Secretary Jaegermann mailed to each jeweler in St. Louis a circular announcing the organization of the association, and cordially soliciting memberships. So far the returns have been quite satisfactory. As soon as the Association is on a firm basis the State will be canvassed and then the entire Southwest.

NATIONAL ASSOCIATION OF JOBBERS IN AMERICAN WATCHES.

AT A meeting of the Association held on March 6, the following executive committee for New York was elected: S. Oppenheimer, of Oppenheimer Brothers & Veith; F. R. Simmons, of H. Ginnel & Co.; L. Stern, of Stern Brothers & Co.; N. H. White, of N. H. White & Co.; H. H. Butts, of Hayden W. Wheeler & Co.; David Marx and Ira Goddard, ex-officio.

The following circular, dated March 14, was last month sent out by Secretary Noyes to the members of the Association:

Robert Nelson & Co., Toledo, Ohio, have been accepted as successors to Robt. Nelson.

The Pacific Jewelry Company, San Francisco, Cal., having sent in its resignation under a misunderstanding, has withdrawn the same, with the consent of the sub-committee, and is again a member of the Association.

Oppenheimer Brothers & Veith, New York City, are dropped from the list of members at their own request.

The changes in the management of the Non-Magnetic Watch Company of America, do not affect its position as a manufacturer, assurances having been given to the sub-committee that the conditions of co-operation will be faithfully maintained in all respects.

Those members who have not paid the annual dues are respectfully reminded that the time during which payment must be made expires on March 21, and,

according to the rules, any member who has not remitted by that time is liable to suspension. Yours truly, JAS. H. NOYES, *Secretary.*

The San Francisco jobbers who are members of the National Association of Jobbers, held their annual meeting last month to elect a representative on the executive committee. A. Heilbronner, of M. Wunsch & Co., was elected.

BOSTON JEWELERS' CLUB.

THE second annual dinner and ladies' night of the Boston Jewelers' Club was held at the Vendome Hotel on the evening of March 7, and was one of the most successful events in the history of the organization. About sixty members and guests sat around a tempting spread. Each member and guest was accompanied by one of the fair sex. Music, flowers and a dainty banquet were among the delights offered. President Charles Harwood gracefully presided. After his neat congratulatory speech, the usual after dinner toasts were in order. To the toast of "The Spirit of American Liberty," Austin T. Sylvester responded; "Our City," Andrew Paul; "Our Jewelers' Club," Commodore C. F. Morrill; "Our Guests," John Shepard; "Our Partners, the Ladies," William H. N. Pratt; "Gems of Our Trade," Eugene H. Richards; "The Jeweled Wheels of Time," Ezra C. Fitch. A poem entitled "Herve Riel" was also read by Com. Morrill. The speeches were full of wit and were much enjoyed by all present. All present appeared to be unanimous in the opinion that seldom had they passed such a pleasant and enjoyable evening. Irving Smith, Secretary of the club, read letters of regret from the following gentlemen, at their inability to be present: H. F. Hahn, President of the National Association of Jobbers in American Watches, Seth E. Thomas, of clock making faine, Joseph Fahys, of Joseph Fahys & Co., Royal E. Robbins, of the American Watch Co, Francis B. Appleton, of Robbins & Appleton, E. J. Scofield, of the Elgin National Watch Co., D. F. Appleton and others.

NOTES.

The twelfth annual meeting of the Jewelers' Protective Union was held on March 3, at the rooms of the New York Jewelers' Board of Trade. William R. Alling and Ira Goddard were re-elected as President and Secretary and Treasurer respectively, L. A. Parsons, Enos Richardson, S. Oppenheimer, I. M. Miller and J. C. Aikin were elected members of the Executive Board.

The Cincinnati Jobbers' Association held a meeting at the Burnet House, on March 4, and elected Clemens Hellebush, Jr., executive for the ensuing year.

The jewelers of Portland, Me., have formed a jewelers' association, and all representatives of that business in the State are to be invited to join. The objects of the guild are—first, mutual protection, and secondly, the promotion of sociability among the members. One feature is to be an annual picnic in July.

The following named firms were admitted to membership in the New York Jewelers' Board of Trade at a meeting held last month: The William Rogers Manufacturing Company, of Hartford, Conn.; Geneva Optical Company, Chicago, Ill.; N. H. White & Co., New York; Aikin, Lambert & Co., New York.

The local association of jobbers in American watches, which was cut off from co-operation with the National Association by the Missouri anti-trust law, has taken no action since the law was declared unconstitutional. An appeal in that case has been made to the Supreme Court, and it is not likely that the jewelers will make a movement until after a final decision.

Larter, Elcox & Co., New York, have been admitted to membership in the New York Jewelers' Association.



[FROM OUR SPECIAL CORRESPONDENT.]

THE PRESENT STATE OF TRADE ANALYZED; COLONIAL TRADE BRISK.—NOVELTIES AND THEIR EFFECT ON BUSINESS.—THE CRAZE FOR OLD SILVER CONTINUES, AND PHENOMENAL AMOUNTS ARE PAID FOR SINGLE PIECES.—THE BIRMINGHAM ELECTRICAL EXHIBITION MEDAL.—THE TASTE IN PERSONAL ORNAMENTS INCREASING.

LONDON, March 10, 1889.

One of the most encouraging aspects of our manufacturing industries, at the present time, is the good news from our Australian Colonies. Some very good orders have lately been received from them, together with the welcome intelligence that trade out there is brisk, generally speaking our export trade is good, and indications point to a further improvement. Manufacturers in London, at any rate, know full well the value to them of a flourishing Colonial trade. I can remember when our Australian and New Zealand Colonies were the best customers of our manufacturing jewelers. I think I am correct in saying that, at one time, they were the best markets for the British manufacturer generally. I know they were for the manufacturing jeweler. We are all hoping that they will be so again. There are some other export orders now in hand, which have arrived opportunely, as they balance the slight decrease in the extent of home orders.

In seeking information for the purpose of my communication to you, I naturally take such opportunities as present themselves, to ask a few questions in quarters where the replies are likely to be useful. This might prove an embarrassing method if I acquired the habit of literally telling you what I *hear*. But as what I often hear, does not accord exactly with what I see and know, it is my habit to hear as much as I can and then to form some sort of opinion of my own. For instance in my recent visits to many manufacturing and factoring (jobbing) houses, I have been met with numberless complaints about the falling off of orders, the diminution of business and the like. In the last months of 1889, some houses were unable to execute orders quickly enough. Did they expect that state of things to continue? I did not. The fact is, trade is dull now in the eyes of some makers, *only by comparison.* And the comparison they make is a foolish one. The past seven or eight weeks have been perhaps quieter than those which preceded them. There has not been any rush of orders, but my experience is that there has been an all-round good average trade for the time of the year. There really is no reason for the despondency some of our makers and traders are giving way to. The staple trades of the country are all in good condition, some of them being as active as they can be. So that we may with confidence expect, and I think we should with patience wait for, a good years trade. The manufacturers who are preparing for this and are producing some novelties, will be the most satified at the year's end.

THE EFFECT OF NOVELTIES UPON BUSINESS.

There is no doubt about the fact that novelties still form the great lever by which orders are "raised." I don't say the novelties themselves always sell, but they often answer a most useful purpose whether they sell well or not. This is an old experience, common no doubt to your traders as to ours. During the past week I had occasion to spend a few hours in the buying department of a large shipping house. (Perhaps for your readers, I should say a house exporting largely jewelry and goods of kindred nature.) A manufacturers' card was sent in to the buyer, who at once came out of his room and inquired, "Anything new?" "Yes, you only gave a small

order for some of our Christmas patterns. These Alberts are—." "Much obliged, we are not really in want of anything, but I thought you perhaps had something new, good morning, I thank you. Another time." Later on, after I had been occupied with my own affairs, and the same buyer had been interviewing numerous merchants, I was again in his company, when another gold chain manufacturer was announced. "Anything new?" queried the buyer. "Yes, we are just bringing out this original arrangement of a link and ring, a very neat, substantial looking chain, etc." He opened his roll displaying about six specimens of his new pattern, and about thirty samples of what I presume were mostly old designs. An order was placed, beginning with the new pattern, and including several of the others.

Manufacturers in your country, and in our own, cannot do better than endeavor to be constantly bringing out novelties, and as constantly advertising them in the proper channels. There was a time when the occasional introduction of fresh goods was sufficient for business purposes, but that time has gone, and our customers, dealers and factors now surpass the ancient Athenians in their desire for "Some new thing." It follows, therefore, that manufacturers must produce new things.

SOME INTERESTING NOVELTIES.

As a novelty I may mention a very effective necklace formed of delicate chain work, from which stars made of turquoise are suspended. An old fashion is revived as a novelty, which consists of pocket books covered with thin silver. I do not think they will take here. We are too practical nowadays to have fancy pocket books. Those of us who want them at all, want useful ones. There are still more novelties in coin-mounts. The number of patterns in this class of goods brought out during the past twelve months, is unprecedented in the history of any one article; yet the demand is maintained. There are some elegant designs in brooches, some of them being suitable specimens of art work. Brooches seem to lend themselves specially to the fancy of the artist in jewelry. They are capable of such a variety of treatment, that it is not surprising there is always some new novelty in them. Light flowers, still lighter butterflies and other natural objects are successfully treated as ornaments for the hair, for hats, and for the bodice. The French have hitherto excelled in this delicate manipulation, but although they are not undertaking it extensively, our British jewelers have shown that they can produce beautiful specimens of it.

A ONE-PIECE BUTTON ABROAD.

Another branch which is fully occupied with orders, at the present time, is the stud trade. There is a constant demand for the cheaper goods, but in the medium and best lines there is a fairly good business. I have just seen a very good single-piece gold stud, in which no solder is used. It is struck from a single disc of metal, and has therefore a perfectly uniform curve. There are not many orders for those mounted goods just at present. A moderate consignment of diamonds comes with each Cape steamer, but the prices are still kept up and business thereby is limited. I understand the principal purchases lately have been for your market.

THE CRAZE FOR OLD SILVER.

In a recent communication I referred to the craze for old silver. As an indication of the phenomenal advance in the market value of old silver, I may mention the price realized last week for the long celebrated "Blacksmiths' Cup," which was disposed of at the sale of Sir Frederick Millbank's collection of plate. This cup has a history. It bears the date 1655, and is a splendid specimen of the work of that day. For many years it was in the possession of Ralph Bernal (the father of the Parliamentary celebrity, Mr. Bernal-Osborne), at the sale of whose effects it was purchased for £37.10-0 by General Lygon. For some reason the general sold it soon afterward for £25 to Mr. Dexter, and at Mr. Dexter's sale in 1872, the cup realized £367.10-0, while last week after a keenly contested bidding, the same cup was sold for £535!



THE BIRMINGHAM ELECTRICAL EXPOSITION MEDAL.

I send you a sketch of the gold medal awarded at the Electrical and Industrial Exhibition at Birmingham last year. The letter E. I. E. in scroll work, and the Crown, are pierced out. The lettering on the ring is in relief from the gold, and the ground work is enamel. There is not much to be said for this medal, except that it is a neat and to some extent, artistic memento of a remarkable exhibition.

TASTE FOR ARTISTIC JEWELRY INCREASING.

An increased taste in the matter of personal ornaments is evidenced by the display in our jeweler's windows. If our dealers are meeting a demand by the stocks they are keeping, we may congratulate ourselves that there is now a public taste of a much higher order than was exhibited a few years ago. It may not be that such large articles are either worn or used as formerly, but I find that there is a more cultured taste prevalent now. If the higher branches of the jewelers art have developed this improved taste the jewelers business is reciprocally rewarded. I do not mean to attribute the present healthy condition of our trade altogether to the better taste of the buying public. The present activity in the jewelry and metal working industries comes with, and to a great extent from, the improved condition of the trade of the country. But the fact that the augmented trade and the latest fashions are concurrent with the display of a finer taste by the purchasers of our productions, shows that the increased demands are more likely to be permanent than if these demands were made without any reference to artistic merit in the production. Persons with little or no taste, who buy jewelry with no other consideration, other than that they have money and want to purchase something costly, will get rid of both of it, and of the desire for it, with the first check on their resources. On the other hand, those who select and purchase an article, because it is beautiful, will make great efforts to retain it, and to add others to it because it is beautiful. The love of the beautiful grows upon us, the love of the mere costly departs the moment the utilization of its cost—the only value recognized in it—is called for in another direction. This is why I regard the present cultivated public taste, as indicated by the article displayed, as being a bright omen for continued prosperity in our jewelry trade. VIGILANT.



[FROM OUR SPECIAL CORRESPONDENT.]

CHICAGO, March 20, 1890.

There seems to be no "let up" in the increase of membership of the Chicago Jewelers' Association, five new members being taken in at the last meeting. I am unable at this writing to give the names, but will not forget them in our next.

The ever-genial A. L. Sercomb, manager of the Chicago branch of the Meriden Britannia Co., entertained your correspondent with a "lookover" of the photograph of the new goods, novelties, etc., to be placed on the market, for the coming spring trade. Business is a little quiet with the Meriden Company, at present, but they claim the outlook for a good opening is better than for the past three or four years.

For twelve years C. E. Hodge has been connected with the Meri-

den Company in Chicago, as he says, "from errand boy up." Mr. Hodge has resigned his present position, to take effect April 1st.

R. C. Demarest, for some years an employe of the Meriden Company, and later with Weber & Co., has joined forces with Mr. Hodge, mentioned above, and will, after the first of April be found at 97 State street, representing two large eastern manufacturers. They have secured the agency of the Hartford Silver Plate Co., of Hartford, Conn, and also that of the C. Rogers & Bros., flatware, Meriden, Conn. The new firm has secured a good location, and contrary to the custom of the past, will aim to carry a full line of goods at all times.

At the warerooms of Otto Young & Co., everybody seemed busy and cheerful, and all appearances confirmed the statement that while business could be better, it was not by any means bad, collections a trifle slow, but not a failure to report, this firm being especially fortunate in this particular.

A special feature in the retail department of Giles, Bro. & Co. is their *Blue Letter Sale*—meaning a direct and telling reduction in some magnificent articles of art, bric-a-brac and solid silver goods.

Constantly increasing business and a desire for better facilities as to room, light, power, etc., forced F. H. Noble & Company to look about, as it were for a place to permanently lay their head. That place was found at last in an excellent piece of ground at 59th and Wallace streets, on the line of the Western Indiana Railroad, and in the beautiful suburb of Englewood, but twenty minutes ride from the heart of the city of Chicago. Here the firm have just finished a commodious two-story pressed brick structure 40x100 feet. Special attention was given to the question of light, something eminently necessary in the manufacture of jeweler's findings. Large and almost continuous windows on all sides, with from twenty to fifty feet space between buildings. Vault room and ample steam capacity were also especially provided for. No less than ten different eastern and western railroads pass the factory, stopping within fifty feet of the shipping department door. The sales room and city office is in the newly completed Stock Exchange building, 167 Dearborn street, one of the best and most centrally located office buildings in the city.

In the pretty town of *Oak Park*, one of Chicago's suburbs, is the factory of the American Spring Company, and an interview with them causes one to think that a revolution in main springs is at hand. After two years of hard and untiring experiments, defeats and successes, and an outlay of upwards of twenty-five thousand dollars, success has at last been attained through the skill of Fred Purdy as electrician and Harry Procunier as mechanic. It was for a long time found that variations in the thickness of watch springs, not exceeding ½ of 1,000ths of an inch, would, by electric heat reduce a variation of temperature, that would create a corresponding variation of hardness. The same objection existed in the "bluing process," which was at one time abandoned. It was further found impossible to roll a ribbon of steel with a less variation than above named. All these difficulties have been thorougly overcome. The machinery for accomplishing this is automatic, the hardening uniform, and under perfect control, and the watchmaker may soon expect a watch mainspring made by an "Electro Thermic" process that will possess an elasticity from five to ten per cent. greater than that produced by the ordinary method of tempering; giving a spring of equal strength and proportionately thinner, thereby reducing the liability of breakage, and a graduated temper heretofore unknown, whereby the inner end is made softest, becoming gradually harder until the outer end is reached, again reducing breakage. The company having achieved the success herein mentioned, naturally feel very much elated, and I can see no reason, if no drawback should appear in the actual manufacture in quantities, why the American Spring Co. will not be a boon to the watchmaker and consumer, causing considerable less profanity among both classes.

Spaulding & Co., the enterprising retailers, are planning for the erection of a magnificent fire proof building, at least ten stories in height, on a site not far from their present location. The building will be in the most modern style of architecture, and the store will be fitted up specially for the accommodation of this growing house, whose career has been one of continuous and rapid growth, until the present quarters, admirable as they are, are entirely too small for the needs of their business. Building operations will soon be commenced.

C. K. Giles, of Giles, Bro. & Co., has applied for a patent on a magnetic equalizer, which is a semicircular piece of steel, setting close to the mainspring barrel, and provided with upturned ends for the discharge of surplus magnetism. Mr. Giles claims that the forces within the field of the mainspring barrel are thus maintained in a state of equilibrium and the rate of the watch made more uniform.

M. C. Eppenstein & Co. will shortly move from their present quarter at 67–69 Washington street to more commodious offices at the corner of State and Monroe streets.

Work on the new factories of the Illinois Watch Case Co., at Elgin, Ill., is progressing rapidly, and the company expect to have them in running order in a month or six weeks.

At the salesrooms of C. H. Knights & Co., there is the usual bustle. This house knows nothing about dull trade. The word is not in their dictionary.

Obituary.

SAMUEL C. JACKSON.

Samuel C. Jackson, who on March 8th, died of heart disease at his family residence Flushing Bay, L. I., was well and favorably known in the New York jewelry trade for over forty years. When seventeen years old he quitted his home in Glen Cove, L. I., and became a clerk in the big jewelry house of S. P. Williams at 16 Maiden lane. He left there to serve with Platt Brothers, and in the years that followed he was associated as a partner with the firms of Montag & Jackson, 15, John street. His firm, which was subsequently known as Ignatius Sturn and Samuel C. Jackson, did a large business and had two important branch houses at Paris and Amsterdam from 1860 to 1865.



SAMUEL C. JACKSON.

Mr. Jackson began business alone at 180 Broadway in 1870 and continued it up to his death. He was a large property holder on both the north and south sides of Long Island. The bulk of this land was derived from the Indians by his ancestors, and the deeds contain the curious attests of the red men. Mr. Jackson's father the Hon. Thomas B. Jackson, was a Congressman from New York in the early years of the century. The old Jackson mill yet standing as one of the landmarks at Astoria was built by one of Mr. Jackson's ancestors over 200 years ago.

A widow and six children survive the dead merchant. The funeral service was held at St. George's Church, Flushing, L. I., on March 11th.

GEORGE W. WEBB.

George W. Webb of Baltimore, Md., one of the best known jewelers in the country, died early on the morning of the 12th, of double pneumonia.

Deceased was born in Baltimore in 1812. He learned the jewelry

business with Hugh Gelston, and afterwards with his own father, James Webb. When about twenty one years of age he went into business for himself on the north side of Baltimore street, between Charles and St. Paul streets Later he was in business on the north side of Baltimore street just east of Calvert street, and subsequently at the south-east corner of Baltimore and Light streets. He was skilled as a gold beater and jeweler, and a model of the old apprentice system which made a master workman of the boy. Probably no citizen had a larger circle of acquaintances and friends. His irreproachable character gained for him the title of the "honest jeweler," by which name he was widely known. He was actively identified with the growth of the city for the past three-quarters of a century. Charity was one of his leading traits, every good cause receiving his liberal assistance.

Mr. Webb, at his death, was connected with the establishment of of Welsh & Bro., 5 East Baltimore street. He was a widower and leaves two daughters, Mrs. Charles E. Gough and Mrs. George W. Abell, wife of George W. Abell, editor of the Baltimore *Sun* The funeral took place on the 14th, numerous friends being present.

EX-GOV. JAMES E. ENGLISH.

Ex-Governor of Connecticut, James Edward English, well known among clock dealers throughout the country, died at his home in New Haven on March 2.

In 1855, when the Jerome Clock Company, of Connecticut, was in difficulties, Mr. English assumed control of the concern and reorganized it under the name of the New Haven Clock Company. Under his judicious management as president the company rapidly rose in prominence among the clock manufacturers of the world. Many New York dealers remember the ex-Governor, who at one time used often to visit the metropolis to solicit business for his company.

CHARLES S. SPOONER

In the death of Charles S. Spooner which occured at his home, 298 Adelphi st., Brooklyn, N. Y., on March 13, the trade lost one of its oldest members. Though comparatively unknown to the younger generation of the craft many of the older and reminiscent jewelers will remember him with kindly feelings and learn of his demise with regret. The deceased was born in 1809, at Providence, R. I. He received the ordinary school education of that day, and at the age of sixteen went to New York to commence the battle of life. He entered as apprentice the old time jewelry manufacturing house of Palmer & Clapp on Reade st., served his five years term there and worked for some time as journeyman. He was subsequently employed in the factory of Downing & Baldwin, 145 Reade st. About 1840 he entered the employ of Arthur, Peckham & Rumrill, 17 John st., with whom he remained until 1848 when he formed a partnership with William H. Welch, an engraver and fellow workman under the firm name of Spooner & Welch, and started in the retail jewelry busines at 73 Myrtle av., Brooklyn. This avenue which is now one of the busiest thoroughfares in that city had just then been opened. For over forty years, the business has been carried on at the same spot, though the number of the building has been changed, it being now 85. During the long period success generally attended the business, it having been at one time perhaps the largest in the city. The partnership remained undisturbed during forty years, until the death of Mr. Welch, on September 15, 1888, when the buisness was disposed of to W. F. Boetther, formerly clerk.

Mr. Spooner was a man whose joviality, whole heartedness, and generosity endeared him to hundreds. For forty-seven years he was a popular member of the Ivanhoe Lodge, I. O. O. F., under whose auspices, the funeral took place on March 16. The interment was at Greenwood Cemetery.



[The Circular is not responsible for the opinions or statements of contributors, but is willing to accord space to all who desire to write on subjects of interest to the jewelry trade. All communications must be accompanied by a responsible name as a guarantee of good faith. No attention will be paid to anonymous letters. Correspondence solicited.]

Buffalo, N. Y., March 17, 1890.

To the Editor of the Jewelers' Circular:

Can you tell me a good authority in book form on diamonds and precious stones, in your next issue, and oblige a subscriber.

E. V. S.

[According to Geo. F. Kunz, the well-known gem expert and mineralogist, the work of Edwin W. Streeter, entitled "Precious Stones and Gems," is the best authority on precious stones generally. But this book is out of print and unobtainable as far as we know. "Leisure Hours Among the Gems," by A. C. Hamlin, is full of reliable information. It is published by James R. Osgood & Co., Boston, Mass. For practical use as a hand book, the work of M. D. Rothschild, "Hand Book of Precious Stones," is very good.—Ed.]

Cleveland, Ohio, March 19, 1890.

I have a hundred or more numbers of The Circular on hand, and as I am breaking up housekeeping, I have no place to keep them. As they are too valuable (to somebody) to put in the bag for the paper mill, I have been cudgeling my brains to devise some way to give them away to those whom they might benefit. Of course they are not consecutive either in number or years, but each one contains something that would benefit the young mechanic and many an old one for that matter. It may be as good a way as any to offer, say 12 numbers, to any one who will pay transportation, either mail or express. R. Cowles.

BACK NUMBERS TO BUY AND SELL.

Biloxi, Miss., Feb. 27, 1890.

I have back volumes of The Circular complete, volumes 8, 9, 11, 12, 15 and 19.

All of vol. 14 but No. 5.
" " 18 " " 8, 9. 10, 11, 12.
" " 16 " " 6, 9.
" " 15 " " 11, 12.
" " 14 " " 12.
" " 11 " " 1.
" " 7 " " 1.

I will sell these Circulars at cost. L. B. Vanderpool.

BACK NUMBERS AND "EXCELSIOR'S" TREATISE.

West Superior, Wis., March 13, 1890.

I have been a constant reader of your valuable journal since 1875, and have now on file your complete issues from Jan. 1887 to the present date, with the exception of Dec. number, 1884. These numbers are all in perfect condition, without soil or tear. I would like to dispose of the thirteen volumes (1887-1889) in one lot. To make good the loss of the one number. I will throw in a complete volume (1886) of the *Manufacturing Jeweler*. I have also four complete volumes of the *Trader*, published in Toronto. Also one copy of Excelsior's "Practical Treatise," bound in cloth, in *good* condition.

The above will be sold to the highest cash bidder. Let the offers for the whole of above (or part) come in speedily.

Chas. H. Barker.

Story of a Successful Business Career.

THE REGRET expressed from all sides in the jewelry trade at the retirement into private life of J. Eugene Robert, is evidence of the high esteem which that gentleman commanded from the business side of his life. That from the domestic and social sides he enjoys the same flattering regard the reader will infer from a perusal of the following sketch.

The unfolding of the story of a business career, not sensational, with a million to-day and a farthing to morrow, but quiet and modest, though successful, through such agents as honest, truthful and straightforward dealings, and the continued sale of thoroughly reliable commodities may possess a commonplace flavor, but the moral it teaches cannot too often be brought to the minds of our younger men of business.



J. EUGENE ROBERT.

Born in a town, Chaux-de-Fonds, Switzerland, where the very stones seem to breathe horology, is it not natural that young Eugene, as a lad, should have his interest centered in that subject, and that he should seek through it in after years the road to fortune and honor? While he was still a boy his family came to America and settled in New York, within a stone's throw of the present great jewelry district. He attended the public schools, and among his class and playmates were several boys who now, as men, figure prominently in the watch and jewelry industries. Well do these gentlemen remember the day when he, a sturdy boy of 13 years, unaccompanied, left America in a sailing ship for Konigfald, Germany, with the object of acquiring the German language.

In 1849, shortly after his return from Europe, he was taken into partnership with his father, J. H. Robert, who had been for some years doing in Fulton street a watch importing business. The name of the firm was changed to J. H. Robert & Son, and the establishment was removed to 15 John street. About 1853, the father's health having broken down, compelling him to relinquish business and to travel, J. Eugene assumed entire charge and continued the business for a few years when he sold out, and engaged as bookkeeper and salesman with D. M. Dorsival, another watch importer. Here he remained for about five years, until Mr. Dorsival failed in 1861, when he entered the employ of J. A. Abry, importer of watches.

In 1866, having previously received overtures from the Longines Watch Co. to represent them and act as their sole American agent, Mr. Robert left Mr. Abry and engaged in business under his own name at 24 John street. This was the real beginning of the house that has since become celebrated throughout the country. In 1871 he moved into the first Waltham building at 1, 3, 5 Bond street, and in 1872 A. Wittnauer, now successor to the late firm, entered the office of the concern. In 1876 Georges Agassiz having left the Longines Company and started a factory to manufacture a fine grade of movements, specially adapted to the United States trade, Mr. Robert became his American agent. They had also by this time acquired the agency of the celebrated Louis Audemars watch. In 1877 the entire Waltham building was razed by fire, and he shortly after moved to 30 Maiden Lane, where he has since remained. In 1884 Mr. Wittnauer became partner in the firm, the name of which was changed to J. Eug. Robert & Co. By this time the business of the concern had reached voluminous proportions, for besides being the agents of the three aforementioned excellent watches, they had acquired the agencies for several other fine makes. All these watches have long since achieved a national reputation, and have rendered the name of J. Eug. Robert & Co. thoroughly well-known throughout the United States.

Throughout this career of 40 years, Mr. Robert has ever enjoyed a respect and popularity which should flatter any man. Though not of the bluff, hail-fellow-well-met variety of mankind, his active generosity and fairmindedness of character, combined with a quiet dignity and modesty, command the good will of all with whom he is associated, no matter how slightly. Regarding the house which he established, its reputation has ever been of the highest, and its name synonymous with honest and straightforward dealings.

Mr. Robert's popularity is especially conspicuous among the Swiss colony of New York. On many occasions he has been elected president of the Société Suisse de Bienfaisance (Swiss Benevolent Society), and through his efforts a home for the care of infirm and indigent Swiss has been instituted in New York. This popularity extends to Switzerland, through which, together with his earnestness and devotion, he was, a few years ago, appointed Vice-Consul to New York. He is also prominent in the French Evangelical Church of New York, of which for many years he was treasurer. Through his ardent labors the church, once in a struggling condition, is now flourishing.

Mr. Robert married in 1870, and has a wife and three children, two daughters and one son. His idea in quitting business is to enjoy quiet and rest after his long and busy career. He intends for the present to reside in New York, and can still be frequently seen going in and out of the old office, where he will be very happy to see his old friends.



[From Our Special Correspondent.]

Minneapolis, Minn., March 12, 1890.

JEWELERS WANTED IN THE NORTHWEST.

There is little to report about the jewelry business this month except robberies and two or three assignments. All the local jobbers report trade very quiet though not more so than at this betwixt-and-between season last year. In fact, the Minneapolis Jewelry Manufacturing Co. say business is fair.

A. Sanborn, on May 1, will remove his stock from its present store to a new one under the establishment of the Minneapolis Jewelry Manufacturing Co.

While the writer was looking at some valuable rings at a jewelers' the other evening, and while the show case top was rich with them, the electric lights suddenly went out. This led the jeweler to make what I thought a very sensible point. "Do you see that switch? I have often thought how easy it would be for two confederates to rob a store if one occupied himself in looking at a tray of articles while the other touched the electric light switch, whereupon both could make good their escape. That's why I had mine put in such an unhandy place." Seems to me the idea is a good one to spread.

The method employed by a young man who yearned for a watch at Collum's jewelery store lately, though, was more primitive. He carefully looked through those he liked and while the clerk was writing the guarantee, the young man quietly took the one he had

selected and bolted. He escaped. Another Minneapolis jeweler, L. Lehman suffered loss by fire recently, though the loss was principally caused by water.

Henry Carpenter, of the Minneapolis Jewelry Manufacturing Co., is on the sick list.

S. Gittleson, a small Minneapolis jeweler, was recently obliged to take out a pawnbrokers' license and decided to bring a case to test the ordinance. He pawned the watch to a fellow member of the craft and then swore out a warrant against him, J. E. Luce. It is claimed by the authorities that all those who loan on chattels or personal property are amenable to the ordinance. The case against Luce was dismissed, however. The chief of police had requested the city attorney to prepare the ordinance and it was recently unanimously passed. City attorney Russell stated that he had been informed by the chief of police that these men were doing a regular pawnbroking business without paying the city a license. They would advance money upon diamonds and jewelry and then keep possession of the property, protecting themselves from prosecution by taking a chattel mortgage, which they filed in the office of the city clerk. In this way considerable stolen property had been disposed of, and the police were unable to either recover the property or to catch the thief. The pawnbrokers were now compelled to report all pledges received, and in this way much of the property stolen in Minneapolis had been recovered.

The Self Winding Clock Co., are putting up a mammoth clock of their construction in the rotunda of the Pioneer Press building. The dial is four feet in diameter.

St. Paul jewelers have been for several weeks troubled with diamond thieves who have got away with more than the victimized like to admit.

R. C. Kruschke, of Duluth, Minn., has invented and will patent a new electric clock which he claims is simple in mechanism and will keep absolutely correct time.

Arthur K. Lord of the Milwaukee firm of Lord Bros. Jewerly Company has gone east to take a complete course of optical lectures. He will be absent about a month.

These two clippings show unoccupied fields for somebody. A Sheldon, N. D. paper says, we need a good jeweler here—one who will carry a good stock and at the same time do repairing promptly. Such a man could make it pay as we have now no jeweler here at all. Another in Wykoff, Minn., says, "Art Hall of Preston, one of the best jewelers of Filmore county, is coming to Wykoff, we hear. Whether to go into business here or to remain temporarily we do not know. There is a good opening for a jeweler here."

HENDERSON.

Beautiful Testimonial in Silver.

THE STERLING Company, of Providence, R. I., have during the past two years become prominent as manufacturers of an extensive, attractive and salable line of sterling silver small wares. The company's force of designers and artisans have directed their efforts exclusively in this channel, but that they are capable of more exacting work, is evidenced by the handsome cigar urn illustrated below, which is the first large piece of silver ware the Sterling Company have turned out.

This commendable piece of silversmithing was ordered by the members of the grand jury of Essex county, New Jersey, to be presented as a testimonial to their foreman, Charles A. Sterling The urn is about eight inches in height, while the cover is six inches in diameter. As it is intended as a memento of the pleasant association of the members of the jury, the judge of the court, the sheriff and the court officers, the body of the urn is divided into six oval panels, on which are etched in fac-simile autographs the names of these gentlemen. The piece is decorated with repousé chasing, is oxidized, and on the cover, modeled by the company's superintendent, Mr. Wientge, is a bas-relief profile of Mr. Sterling, which is said by his intimate friends to be as near a perfect likeness as it is possible to produce in metal.



THE STERLING TESTIMONIAL.

The interior is divided into twenty-four spaces, twenty-three of which are to hold cigars, while the remaining one is left blank and marked "excused," because of the custom of drawing twenty-four jurymen and excusing one in order to leave an odd number in the body.

Herman Schiener, one of the jurymen, on receipt of the urn, wrote the Sterling Company, that he considered it a grand success, the beauty of the work seeming to increase everytime he looked at it.

ONE MONTH'S COMPLIMENTS—MARCH.

Goveuneur, N. Y., March 5, 1890.

I have been a subscriber since 1876, and should continue if I had not quit the business. W. E. Smith.

Oshawa, Ontario, March 6, 1890.

We have no fault to find with The Circular, and have been well pleased with its contents since subscribing. Felt Bros.

Worcester, Mass., February 25, 1890.

I am pleased with The Circular; have received the numbers all O. K. Albert Young.

Grafton, W. Va., March 3, 1890.

I cannot afford to be without it. Geo. V. Ruhl.

Windsor, Ontario, February 24, 1890.

Having seen a copy of The Circuar and being a beginner at the business, thought your book would be beneficial to me, so concluded to send for it for a year. A. Blackburn.

Mifflinton, Mich., March 1, 1890.

I find it a very valuable friend, and one I do not feel like doing without. J. W. Wagner.

Allahabad, India, January 29, 1890.

A short time ago I sent you $3 for one year's subscription to The Circular. I requested you to send it to my address here at Allahabad. I am now leaving for Europe, and would ask you to be good enough to send in future the paper to the following address:

I. Zuberbuhler,
Almendweg, Spercher (Ct. Appenzel), Switzerland.

Washington, D. C., March 6, 1890.

The Circular has arrived, and is an extremely well-executed publication. W. X. Stevens.

Cleveland, Ohio, February 25. 1890.

Have been feeling lonesome without The Circular. Send me December and January numbers. I. Lehman.

Cleveland, Tenn., February 28, 1890

Please send me your valued Circular for one year. Am in receipt of the February issue, and find some excellent reading matter in it. W. O. Horner.

Warsaw, Ind., March 15, 1890.

Have taken The Circular for some twelve years. Can't drop it now. J. W. Curtis.

Laurel, Mont., March 11, 1890.

Your Circular came to hand. I think it something every jeweler should take. J. T. Sanford.

St. Paul, Minn., March 11, 1890.

I have three extra copies of The Circular, Nos. 10, 11, 12, Vol. XVII, 1886. Will they be of any use to you to make up a set? I am short Nos. 4 and 6, Vol. XVIII, 1887. Can you supply them to me and if so at what cost? I consider my 18 volumes of The Circular the *most valuable part of my library*, and I refer to them more times than all the other works I have. F. M. Finch.

Offerman, Ga., March 12, 1890.

I look upon The Circular as the old reliable; I carefully peruse and retain each and every number, and look eagerly for the next. J. J. Gibbs.

Lockport, N. Y. March 14, 1890.

A few weeks since I sent you an advertisement mentioning that I had a show window to let to a watchmaker. From that advertisement I have received more than twenty communications, and the window is occupied with my own wares, having concluded not to rent it. *Does advertising pay?* I should remark, that it does. In answer to advertisement in your paper, I received letters from all parts of the country. J. H. Staats.

Valdosta, Ga., March 17, 1890.

I this day sold my business to R. T. Goodwin & Co.; but I want you to continue my paper for I do not wish to be without a paper I have been reading for fifteen years, and to which I have been a subscriber for ten years. B. W. Bentley.

Otay, Cal., March 1, 1890.

The Circular is read with much interest.

Otay Watch Co.

Chillicothe, Mo. March 18, 1890.

You will find enclosed express order for $4; please send to my address The Circular for 1888 and 1889.

E. M. Crellin.

London, Eng., March 7, 1890.

I have been looking over your February number, and I take this opportunity of congratulating you upon the attainment of your "majority," or as we call it here sometime, your "coming of age." Your Circular has long since passed the "experimental," and for some years has been recognized as an adequate fulfillment of the requirements it was established to meet. As one who has had a long and intimate connection with technical and trade journals in this country, I can say that The Jewelers' Circular comes more nearly to my idea of what a trade journal should be, than any I have met with in this country. Notwithstanding all we hear from your side of the Atlantic to the contrary, there are many things that you can learn from the old country yet, but the first number of the twenty-first volume of The Jewelers' Circular is sufficient evidence that you can *teach us* exactly what a trade journal should be. I do not know of a journal that more closely sticks to its text—that is the interests of the trade it represents—than yours does. I can quite believe that anyone in your trade who had subscribed to The Circular would feel lonely without it. It is full of very useful information, clearly expressed. It is well illustrated and admirably printed. The information you give is just that which traders want, at any rate it is that which they ought to have.

Wm. Thomson.

Being now twenty years of age The Jewelers' Circular celebrated the event by changing the color of its cover for the February issue, and making that number something extra in the way of both reading matter and advertisements. The Circular was the first of the jewelry trade papers, and we cannot help regarding it as the best of all our contemporaries.

Manufacturing Jeweler, February 15, 1890.



Proceedings of the Watchmakers' and Jewelers' Union.

[NOTICE.—We shall be pleased to receive and discuss descriptions of new tools, attachments and improvements in any branch of our trade, and publish them free of charge; also inquiries for those desiring information on any point of general interest. Communications should be written as concisely as possible consistently with clearness, on only one side of the paper, and be received here by the 10th day of the month, in order to be discussed at our meeting for that month and inserted in the next issue of THE CIRCULAR. Address them to "Secretary of the W. & J U., care of THE JEWELERS' CIRCULAR, 189 Broadway, New York." For full information for correspondents, see our Proceedings in THE CIRCULAR for October, 1889.]

Sixth Meeting.—Reported by the Secretary.

The sixth meeting of the Union brought together a goodly number of members; the communications read were short, but referred to topics which were of live interest to the assemblage.

TO PIN THE HAIRSPRING TO THE COLLET.

Pittsburg, Pa., March 1, 1890.

Secretary of the W. & J. U.:

I have had a good deal of trouble lately with hairsprings becoming loose on the collet. Can you inform me how I can pin these springs in such a manner that they will not become loosened again? Yours truly, COSMOS.

MR. HOROLOGER'S views on the subject were listened to; he said: It is to be presumed that such springs as become loosened on the collet have been pinned in with round pins which have been, in addition, filed to tapering. The pin with which the spring is fastened to the collet should be filed but slightly tapering, and flat on one side to about one-half or at least one-third, similar to the jewel pin. The pin would then not only fasten the spring securely to the collet but would also enable an operator to true up the spring in the flat more easily than could be done if the pin were left round. In order to make the pin of the proper length, break a piece of an old spring of about the same dimension as the one to be pinned, and after filing the pin to a proper taper and flat on one side, push it in with the trial piece, mark it for length, and after cutting one end off, round it up a little and cut the pin at the other mark; then fasten your spring in the collet by pressing the pin in firmly, when the spring is true in the flat with the collet. I venture to say that if the operation is performed as it should be, the spring will retain its position permanently even if handled a little roughly.

TO CLEAN DIRTY DIALS.

Albany, N. Y., March 10, 1890.

Secretary of W & J. U:

I have an old Swiss repeating watch, given to me for repairs; it has a silver dial which is very black and dirty. How can I clean it without injuring the figures?

Truly, A. Z.

To this interesting question the redoubtable MR. UHRMACHER answered: If the figures are enameled, which is frequently the case, and which can be ascertained by touching them with the point of the graver, the dial may be heated over an alcohol lamp, after which it must be scoured with pulverized pumice stone on a brush or on the fingers. After this operation the dial may be boiled in a copper cup in chemically pure sulphuric acid diluted with twice its quantity of distilled water. A boiling for a few minutes will render the dial snow white without in the least injuring the enameled figures, Rinsing in hot water and drying in hot sawdust will complete the operation. If the dial has not enameled but painted figures, the use of heat and acid are out of the question, and very careful handling is necessary if the figures are to be preserved. The cleaning or whitening may be performed by rubbing on the dial a thin paste of *precipitated chalk* and distilled water. The operation will consume some time, but a very good job will be the result if the necessary care is taken.

TO HARDEN AND TEMPER THIN STEEL.

Portsmouth, N. H., February 28, 1890.

Secretary of the W. & J. U.:

How may a small French clock pinion or a piece of steel, long and thin, be hardened and tempered without springing all out of shape? X.

MR. BENCHMAN arose, and in his quiet though impressive way spoke as follows: To harden so long and thin a piece of steel as a small French clock pinion without its getting out of shape is a most difficult, and I may say, a very hazardous operation, but still it may be done. The first necessity if it is to be heated is an open fire, is to have a uniform heat. It is preferable to heat the steel in a brass tube filled with charcoal. The tube must have the opening not much larger than the object to be hardened and must be of considerable solidity, as the charcoal without a good body of metal would be a poor heat-conductor. The fluid to be used in the process of hardening should be linseed oil, cottonseed oil, or, the best of all, castor oil mixed with kerosene in proportions of about one-half the castor oil to one kerosene. I have observed that small steel objects spring more in hardening by being plunged into a thin quickly cooling fluid, such as water, etc. By the use of castor oil we have a thick slowly cooling fluid, while the admixture of kerosene oil imparts a high degree of hardness and toughness. I have seen most remarkable results from the use of this mixture, and I can well recommend it for a trial. It is always of paramount importance in performing the operation of hardening a delicate piece without injury, to heat and cool all points in the article simultaneously.

EMERY WHEELS; WATCH CLEANING.

Osakis, Minn., February 24, 1890.

Secretary of the W. & J. U.:

Please answer the following questions: 1—I have attached an emery wheel to my lathe, but am not familiar with emery wheels in grinding. In grinding tools, etc., on such a wheel, is it customary to use water or oil or dry?

2—Some trade journals recommend in watch cleaning to dip the plates of wheels of a watch in a solution of cyanide of potassium (two ounces to one quart water). What I want to ask now is, what is the superior quality in using this dangerous and very strong poison? Does it cut out the gummy oil better than other drugs, as ether, benzine, aqua ammonia and alcohol or the like, or does it give a better luster to the parts?

It seems to me such a dangerous poison should not be used on the bench if it does not possess superior qualities. W. L.

MR. EXPERT handled the first question in the following manner: It depends very much upon what material an emery wheel is made of, whether it must be used dry or run in water. If the component parts are emery and vulcanite or emery and silica, water may be used, or, better still, the wheel may be run in water. But if glue is the uniting medium, water could not for obvious reasons be used. To make the action of the emery wheel highly effective, it must be run at a high speed, say, at from 3,000 to 6,000 revolutions per minute, according as the wheel is large or small.

MR. ADJUSTER, a recent member, aired his views on W. L.'s second question. The use of cyanide of potassium is not to be recommended in watch work, as its careless use may injure the gilding, if not entirely remove it. If every trace is not removed after its use by hot water, alcohol, etc., the parts are sure to tarnish badly and the steel will rust speedily. It is far better and safer to use benzine and alcohol, and finish up with dry bone dust. A mutton bone calcined in a slow fire will have a coating of fine dust on its surface which, when applied with a soft brush to the gilding, will impart a superior luster, and its use does not leave anything behind which

could injure either the steel or the gilded part in the least. Precipitated chalk mixed with alcohol and used moderately is also an excellent medium to remove grease or stains from gilded or polished brass. Strong caustics or acids of any kind are always to be avoided as much as possible in watch work, and their presence on a watchmaker's bench is very much to be deprecated. A clean brush is of paramount importance at all times.

A RELIABLE BOOK FOR REPAIRERS.

Elgin, Ill., March 15, 1890.

Secretary of the W. & J. U.:

What is your opinion in regard to which book is the best for general repairing?

J. L. BEACH.

MR. BOOKMAN said in answer to this question: Every watchmaker who takes pride in his profession ought to have a library of the principal works published on horological matters which can furnish valuable information when needed. The book which I recommend for the particular object Mr. Beach has in view is "Kemlo's Watch Repairer's Hand Book." Mr. Kemlo is known to me, and is a man of great experience and comprehensive knowledge; in style he is lucid in imparting his knowledge.

HOME MADE STAKING TOOL

New Salem, N. C., February 28, 1890.

Secretary of the W. & J. U.:

Referring again to my old Jacot riveting stake, it was not really my purpose to advise the conversion of a good and serviceable Jacot lathe into a riveting stake as described, but am aware that there are many watchmakers who have an old unserviceable one which could be readily so changed and made useful. Doubtless many a good Jacot lathe is rendered useless by such workmen as Mr. Expert alludes to in the January number, who would perhaps be better off themselves were they in some forest with an axe, maul and wedge than handling the delicate tools of a watchmaker.

W. F. M.

MR. ISOCHRONAL said that it cannot be gainsaid that the idea of making a staking tool of a not too valuable Jacot lathe is a happy one, as this kind of lathe has prominently the most important features of a good staking tool, and that is, that the centers are perfectly upright with each other, and by a good dividing disk on the one and a corresponding key on the other, perfect relative perpendicular centers may be obtained.

Norristown, Pa., March 21, 1890.

Secretary of the W. & J. U.:

I have a large quantity, perhaps 200 dwts., of old gold, composed of worn out rings, chains and jewelry, varying in quality from 4-k. to 18-k. I wish to reduce this to a state of purity by removing all alloy, etc. Please tell me how to do this in a reliable and inexpensive way. Also, by the method you suggest, will there be any perceptible loss of the gold?

A. L. LOY.

MR. ASSAYER furnished the following information: There is no process known except to chemists, operators and refiners at the mint, to reduce alloyed gold to a state of purity beyond the resulting constituents being pure gold and pure silver in combination. Jewelers and refiners, as a rule, are not conversant with a method of separating silver, platinum, iridium, palladium, etc., from gold. But the details of the process employed by experienced jewelers for removing base metals from gold I can give you. Before proceeding, however, it is advisable to carefully examine all the gold to be melted, to see that there are not among the articles in the lot any gold pens with iridium points or any platinum, palladium or metals belonging to that class, as a single gold pen point would make ounces of gold hard and brittle and unfit for rolling or forging. A quantity as large as 200 dwts. should first be melted and thrown into cold water, to form shot as small as possible. Next procure a good, strong and sound crucible, large enough to melt at least double the quantity of gold to be operated upon; in this crucible place at the bottom a layer of saltpetre on which place a layer of the shot, and keep on this way alternating the two substances, till about 1 to 1½ ounces of saltpetre has been consumed. Provide a fire of good volume and keep it burning lively, and steadily, but not too fiercely. As soon as the gold is thoroughly melted a commotion in the crucible will take place, which may be intensified by stirring with an iron rod. By this commotion all the base metal is expelled by the action of the saltpetre, showing its exit by strong fumes rising from the crucible, which should be well covered with charcoal. Some people use two crucibles, setting a smaller one upside down on the larger one containing the gold, the smaller one having a hole in its bottom to allow the emission of the fumes. To prevent the fumes from escaping through any other opening than the orifice in the small crucible, a cement of yellow ochre is placed at the line of contact of the two. As soon as the gold has undergone a thorough purging it may be cast in an ingot, examined, and if not sufficiently pure, have the process repeated a second and sometimes a third time. By this operation base metals of all kinds are removed from the gold, and the residue is pure gold and silver in combination. It is to be inferred that a small percentage of the gold and silver will assume a gaseous form and make its exit through the orifice, but the amount of gold thus lost is little, unappreciable and difficult to determine. In conclusion, it may be remarked that a much easier process to reach the desired result would be the transmission to the mint of such quantity of gold as prescribed by the proper authorities, and receive in return pure gold, or both pure gold and pure silver. The expense at the mint is trifling compared with the labor and trouble incidental to the operation as described above.

As it was growing quite late, the meeting closed, several communications being held over till April.

How to Write Your Own Advertisements.

WRITE for the one you can win and write to win him Respect him, use no unworthy means of attracting attention.

An old-fashioned newspaper that uses little cuts to begin advertisement with, by accident turned such a two-line cut of a couple dancing upside down, to the horror and grief of a fashionable dancing master. He rushed to the office and cried, "You've ruined me!" Less successful dancing masters went to the office and asked to have their cuts turned upside down, to see if they wouldn't attract attention.

An excellent bit of instruction! Respect your reader. Appeal to his good sense. By doing that you show your own good sense. Go further. Do not be dull. The reader's mind is not on your subject. Angle for him. Put something in your first line to engage him. He is at the bait. A little life is no harm; a touch of humor may be. He nibbles. Now give him your best.

Be acceptable; don't be tedious; don't forget that the reader is, and ought to be, prudent; don't expect an excess of confidence.

Write for the slow; indulge their slowness: you know they ought to be slow; give them ground of confidence, but be quick about it and mannerly.

Advertise always, never twice alike. The first requirement is an attractive general look. That wins the intelligent reader; not strongly, but gently; and that is the way to win—men do not go courting with muskets.

The next is manners in what you say; but that is negative. Do not, of all things, be servile. Every subject has its proprieties. You must rely on your sense of the fitness of things. What is right for a merchant is wrong for a banker; right for an introducer of something new is wrong for a well-known ware; and different men and firms and standings have different rights and wrongs.

I could not put off manners; but what I ought to have said is, the first thing to think of is something good in the very first line.

Don't put too much in one advertisement. What will you do for the next one? One thought is generally enough for once; next week another; next, another; and so on. But let it be a good one always.

J. E. POWERS *in Christian Union.*

The Chronometer Escapement.*

(WRITTEN FOR THE CIRCULAR.)

By RICHARD LANGE, Glashütte, Germany.

Glashütte, February 24, 1890.

To the Editor of the Jewelers Circular:

This article was recently published in a German horological journal, but I have since essentially altered and enlarged it. I think that the article will be of general interest to your watchmakers, because besides the graphic directions for a correct construction, it also contains the tables for the manufacture of a correct chronometer escapement, which tables until now existed only for the anchor escapement. It is possible from these tables, therefore, to make the whole chronometer escapement as well as any wanting parts. For the sake of greater completeness I have computed the tables also for the German chronometer escapement, because this is becoming known abroad and being received with favor. RICHARD LANGE.

THE DIFFERENCE between a chronometer and an ordinary good watch consists principally in the escapement, the balance and balance spring. Pocket chronometers generally go 30 hours, marine chronometers, however, 2 days (56 hours) and more. In order to guard against the movements of the ship, the chronometer is suspended in the gymbals so as to retain it in a horizontal position.

The vibrations of the balance in a chronometer are nearly always slower than those of watches; in marine chronometers it makes 14,400 vibrations per hour; in watches, 18,000.

In order to obtain good depthings, a high number of teeth and leaves is taken for wheels and pinions. The chronometer was in the last century invented by the well-known French watchmaker Leroy, (about 1765, and perfected by Earnshaw and Arnold about 1780). The inventor used no detent spring, but the arm with the locking pallets moved in pivots, as it does still to-day in the bascule (pivotted detent) and the German chronometer escapement. At the present time detent springs are mostly used, whereby the two pivots with their friction and the oil necessary for them are dispensed with.

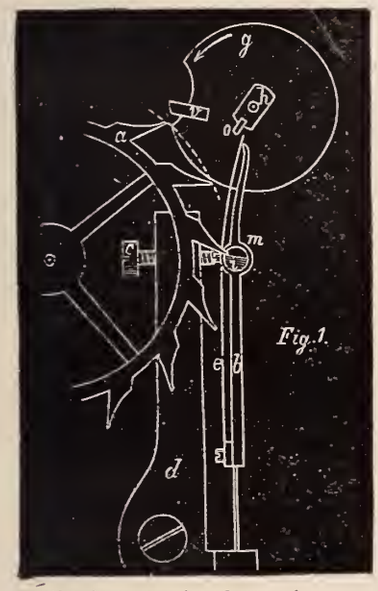


Fig. 1.

The Escape Wheel.—Referring to fig. 1, *a* represents the escape wheel, which, if of brass, gold or aluminum, requires no oil; if of steel, it must be lubricated. The diameter of the wheel is governed by the disposable room, and in a marine chronometer it is generally from 12 to 14 millimeters (0.47 to 0 55 of one inch); in watches from 8 to 10 mm. (from 0.31 to 0.39 inch). The escape wheel has generally 15 teeth, but such with 12 teeth are occasionally found. The wheels are generally made of thick metal and then turned off, except the teeth to reduce their weight.

The Detent.—In fig. 1 *b* represents the detent of tempered and annealed steel. A small pipe *m* carries the locking pallet *i*, which holds the wheel securely between each impulse. This pallet is fastened with a half round pin and shellaced, and placed at an inclination of about 12° to the wheel center so that the spring is constantly drawn by the wheel tooth to the wheel. No definite details can be given about the quantity of elasticity; for pocket chronometers a thickness of 0.025 mm. (0.001 inch), for marine chronometers one of 0.04 mm. (0.016 inch) would be about the proper thing with a proper degree of temper.

The Foot Screw.—A brass piece *d* underneath the escape wheel *a* is furnished with a set screw *c;* against this screw braces the detent in a state of slight tension, in such a manner that the wheel tooth, measured about 1° from the center of motion of the detent, lies upon the locking pallet.

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The Unlocking Spring.—The unlocking spring *e* is of 18 karat hammered gold; it is screwed to the one side of the steel spring, and braces with slight tension against it; the gold spring must be of such a length that after the drop of the wheel tooth from the locking pallet *i*, the tooth moves still forward one-third of the space of a tooth; the spring or detent must then drop. No matter what may be the shape of the spring, it must always point to the center of the balance when the wheel tooth lies upon the locking pallet of the detent.

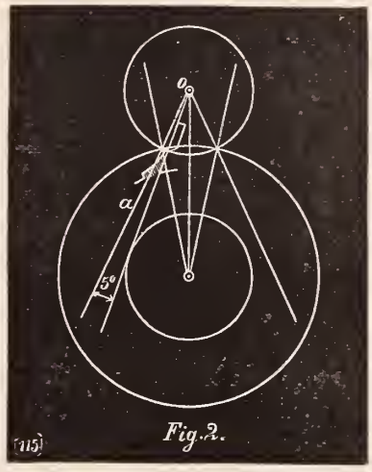


Fig. 2.

The Impulse Roller.—The impulse roller *g* is also of steel and of nearly the thickness of the escape wheel. In the roller *g* is located the impulse pallet *r*. This pallet is often placed at an acute angle to the center of motion so that the wheel tooth becomes effective at as long a lever as possible; this style of placement however, often produces wearing in the wheel teeth. It is best, and experience has sufficiently affirmed it, to have the front plane of the pallet form a straight line toward the center of the roller.

The Inclination of the Wheel Teeth.—The wheel teeth must receive such an inclination that, when the tooth drops upon the pallet, it forms a straight line with the front plane of the latter; it is better that the tooth point drops upon the pallet plane than that the latter drop upon the wheel plane, because in this case it would wear into the tooth. The inclination of the teeth is determined by drawing an angle of 5° to *o a* (fig. 2), and striking on this angle line a contacting circle from the center of the wheel. Although it is apparent that plane would drop upon plane, in reality the tooth edge drops upon the pallet plane, because the roller is already in rapid motion, while the wheel is only set moving.

The Unlocking Pallet.—No definite rates on the size of the unlocking roller *h* with the unlocking pallet *o* can be given; for marine chronometers it is generally made from one-fourlh to one third of the large roller; in pocket chronometers about one half as large as the impulse roller.

The three pallets, for the unlocking, locking and impulse, are made of good rubies, well-polished, and after having been fitted in well they are fastened with shellac.

The opinion is generally prevalent among watchmakers that the chronometer escapement is not sufficiently reliable for watches, which unfavorable opinion is strengthened by the occasional difficult repairs to be made, some of which do not produce desired results. It must be acknowledged that especially in cases where the watch is exposed to percussions the detached lever escapement is to be preferred. The reason why many chronometers are unreliable is due to the faulty construction of the escapement parts; when these are constructed according to scientific rules satisfactory results may be expected.

Fig. 3 shows the correct construction of the chronometer escapement and the shape of the roller. For any given distance of centers of scape wheel and balance and a given lifting, the relative sizes of scape wheel and roller are found in the following manner:

Let us presume that a litting of 40° is required. The center of the wheel *a* and that of the balance *g* are connected by the line *n;* the distance of both points may be optional.

The wheel has 15 teeth, therefore the angle inclosing two tooth points are $= \frac{360}{15} = 24°$. These 24° are with a protractor laid out from the wheel center upon both sides, each with 12°; besides this, two angles each of 11° is measured off which insures the liberty of motion, and, considering the thickness of the tooth points on both sides, there is an excess of 1° each.

To have the neceesary drop 5° must still be added to the 40°, which makes 45°, to be measured off from the center of the balance 22½° upon each side of *n;* through the points of intersection of the

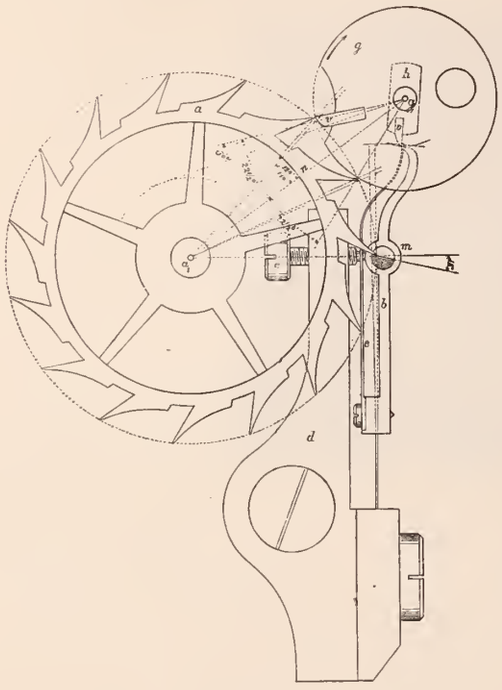
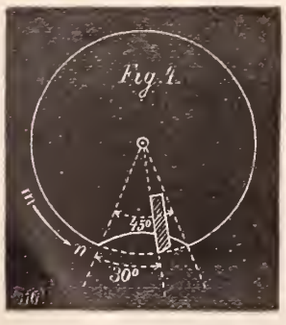


FIG. 3.

a. The escape wheel; *a*1, wheel center; *b*, the detent; *c*, the setting screw; *d*, brass piece, screwed on; *e* gold spring; *g*, impulse roller; *g*1, center of impulse roller; *h*, the discharge roller; *i*. the locking pallet; *m*, small pipe for the reception of the locking pallet; *n*, the distance of centers of scape wheel and balance; *o*, the discharging pallet in the small roller, and *v*, the impulse pallet in the large roller.

sides of the angle from *a* and *g* circles are to be drawn which form the exact diameters for wheel and roller.

A few remarks are to be added concerning the depth and breadth of the crescent in the impulse roller, because by an incorrect execution errors in the escapement will often be caused. For the breadth of the crescent choose generally the distance from one tooth to the other, and the front plane of the pallet is placed in the center of the crescent, although this manner of division has sometimes been found to be incorrect. The crescent must be so deep that the wheel tooth can pass through without touching. The crescent must be so wide that it occupies an arc of from 40° to 45° on the periphery of the roller (or as wide as the degrees of the desired lifting), and there must be divided in such a manner that two-thirds, or 30°, are before the pallet and 15° behind it (see fig. 4). The following is the reason for this arrangement: When the balance is moved slowly in the direction from *m* to *n*, fig. 4, and the unlocking or discharging pallet in the discharging roller forms the required angle with the impulse pallet of the impulse roller, the impelling wheel tooth will stand 5° before the impulse pallet. But when the balance moves freely it will arrive with a velocity acquired after a few impulses before this point; in other words, the distance between tooth and pallet will larger than 5°; the tooth will therefore drop from the arc of the roller through a greater space than 5°.



The Action of the Escapement.—When the balance is moved in the direction of the arrow, the back of the discharging pallet will lift the gold detent spring, and the gold spring will drop from the pallet. But when the balance is turned the other way the front plane of the discharging pallet will lift the detent spring so high that the corresponding wheel tooth lying upon the locking pallet is liberated, and the wheel moves forward. A tooth of the wheel drops upon the impulse pallet, and communicates the impulse to the balance; and when this impulse is completed about one-third (the distance of two tooth points), the gold spring drops from the discharging pallet, the detent resumes its previous position and the balance moves on until its momentum is stopped by the resistance of the balance spring, which now conducts the balance to the other side. When, now, the thickness and temper of the detent and diameter and weight of the balance stand in a correct proportion to the strength of the balance spring and mainspring, the balance will vibrate about 1¼ turns.

The Balance.—Balances with auxiliary compensation are mostly used for marine chronometers. The following details may serve as approximate points for the diameter of a balance: For the usual English chronometers of diameter of plates of from 60 to 76 millimeters (2.75 to 3 inches), the rim may have a diameter of about 30 mm. (1.18 inches); from 60 to 65 mm. (2.36 to 2.66 inches) diameter of movement, about 25 mm. (0.98 inch, and at 50 mm. movement diameter, about 19 mm. (0.75 inch).

The Balance Spring.—A cylindrically-shaped balance spring is almost without an exception used for marine chronometers, and is nearly always made of tempered steel; more recently, however, palladium springs have begun to be used with satisfactory results, as they avoid the disagreeable magnetism.

The spring is manufactured in the following manner: A cylinder is made of brass, nickel or copper, a little longer than the spring is to be high, and somewhat smaller than the diameter the spring is to have in a finished condition. The diameter of the spring is generally about two-fifths of that of the balance. Near each end of the cylinder is a large-headed screw. The spring is wrapped upon this smooth cylinder, fastened with the screws and then tempered. The winding or wrapping is done by increasing the cylinder in a turning arbor; one of the wire ends is fastened with the screw, and to the other end is suspended a sufficiently heavy weight in order to draw the wire tight. The cylinder mounted in the arbor is then slowly revolved, care being taken that the coils come to lie closely alongside of each other. When the cylinder is wrapped full, the other end of the spring is fastened with the screw, and the excess of wire nipped off. The cylinder is then removed, suspended to a piece of wire, laid on a piece of charcoal, and the flame is with a blowpipe driven through the hole until the cylinder is cherry red, after which it is tempered in water upon the surface of which a layer of oil has been poured. The screw heads are next ground white and annealed blue, after which the balance spring may be taken off without danger.

(*To be Continued.*)

Sworn off Swearing Now.

I will never make denial
That I went through daily trial,
And was very often heard to use some language rather rough,
And I'll bet my lowest dollar
That it often raised my *Choler*
When I used to try to fasten those old buttons in my cuff.

There's a lot of patience lingers
In my deft and nimble fingers,
But it tried them very sorely when I'd wriggle, turn and twist,
And, for morals little caring,
Would indulge in fits of swearing,
While I struggled, but in vain, to clasp those buttons on my wrist.

And I well remember heeding,
In a paper I was reading,
A certain advertisement of a wonderful affair,—
A new patented invention,
Introduced with the intention
Of fastening the cuffs with ease and called the "Anti-Swear."

At a store where they supplied them,
I then bought a pair and tried them,
And no longer when I'm dressing any temper I evince,
They are simple, cheap and durable,
And easily procurable,
So swearing is a wickedness I've ne'er indulged in since.—J. S. G.

WATCH AND CLOCK ESCAPEMENTS.*

By Dudley W. Bradley.

(*Commenced in the February, 1890, Number.*)

BLOXOM, in 1853, made the first gravity escapement (Fig. 10), wherein the arms were lifted by a pinion and were locked by the scape wheel teeth. The pinion has nine teeth which in lifting

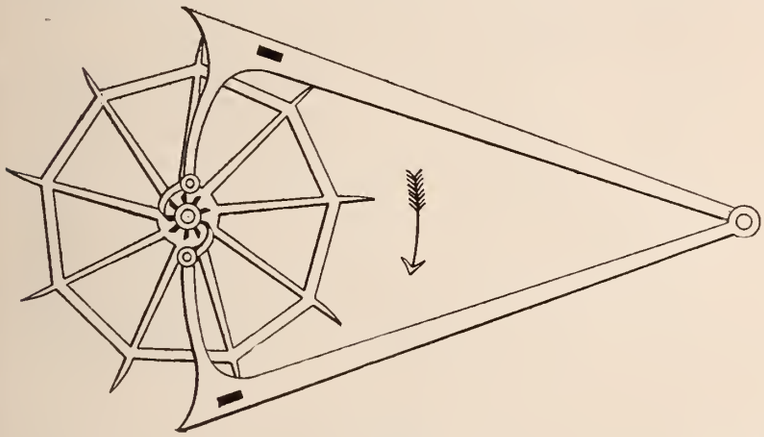


Fig. 10.

the arms act directly across the line of centers, and do their work with ease.

The gravity arms and the wheel are relatives of such proportion that the teeth lock at an angle of 90° and the only point at which the pendulum feels the influence of the train is at the unlocking, and this is at a minimun. But you will see that when a tooth of the wheel escapes, it has a run of only 20° which can lift the gravity arm but a fraction, and the adjustment of the parts requires such delicacy and exactness that none but an expert can manage it with safety. Another objection is that if the pallet were accidentally lifted, the train would take a very demoralizing run.

After the advent of Bloxom's escapement, a number of gravity escapements sprung into life, of which the single pin, three-legged (Fig. 11) is one, though none have proved of much practical use. They proved their greatest utility in giving birth to Dennison's three-legged gravity escapement (fig. 12), which was invented

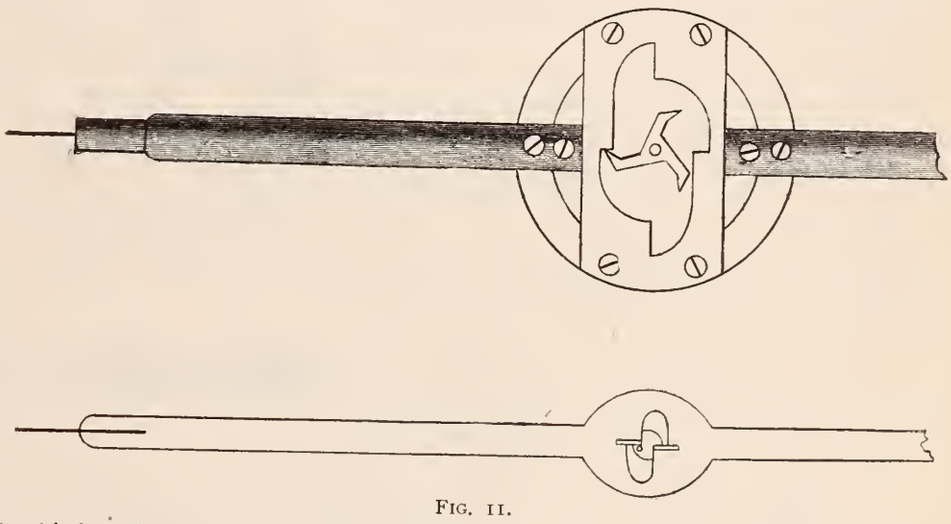


Fig. 11.

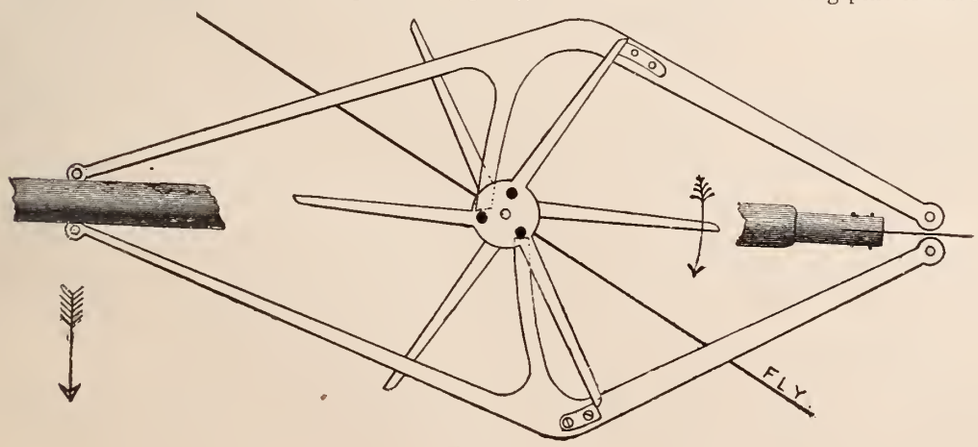


Fig. 12.

as its name indicates by E. B. Dennison, subsequently Sir Edmund Beckett and now Lord Grimthorpe, in the year 1854.

This escapement is the best for large tower clocks, which have to move a number of heavy hands exposed to wind, rain and snow; the driving weight of the clock can be constructed so as to move the hands under the most adverse circumstances, without affecting in the least the motion of the pendulum. The escapement consists of two gravity impulse pallets, pivoted as nearly as possible in a line with the bending point of the pendulum spring. The locking wheel is composed of two thin plates having three long teeth each. These two plates are squared on the arbor, a little distance apart, one on each side of the pallets. Between them are the three pins which lift the pallets. These pins are generally the bodies of three screws used to connect the locking plates. The pendulum is traveling in the direction indicated by the arrow, and the left-hand pallet has just given the impulse. The pendulum rod in its swing will push the right-hand pallet far enough to allow the the leg of the front locking plate, which is now resting on the block, to escape. Directly it escapes, the left-hand pallet is lifted free of the pendulum rod by the lowest of the three pins. After the locking wheel has passed through 60 degrees, a tooth of the back-locking plate is caught by the locking block on the left-hand pallet. There should be a couple of banking pins to stop the pallets from going lower than the point where the left-hand one is shown. This allows the lifting-pins to have a little free run before reaching the arm. A fly is attached to the arbor carrying the three-legged wheels to prevent the escapement from tripping.

A most excellent escapement for French clocks or clocks of moderate price is the Brocot escapement (figs. 13, 13a, 13b). The setting or anchor proper is made of brass and two rollers project from it. They are cut away to half their thickness. The locking takes place when a tooth rests against the highest point of the semi-circular face of the roller, and the impulse is occasioned by the pressure exerted by the extremity of the tooth against the inner portion of the curved face of the roller, when in motion from the axis of the wheel. Although this escapement has one really weak point, namely, loss of force occasioned by the accelerated movement of the wheel, towards the conclusion of the lift, it has compensating

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advantages, that it presents no difficulties of construction, that its acting surfaces retain the oil; that it is very easy to guarantee its lasting by making the rollers of some hard stone; and finally that its extensive adoption for many years proves that, if made with intelligence, it will give results that are perfectly satisfactory for ordinary purposes.

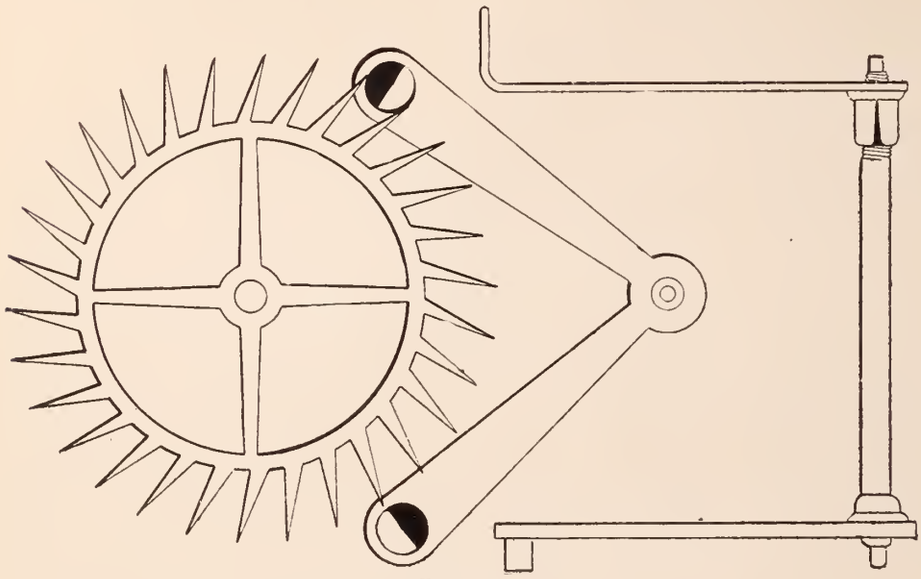
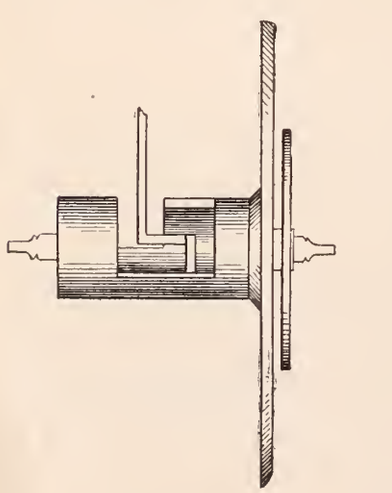


Fig. 13.

The following are the principal escapements for portable timepieces in use at the present day:

The cylinder escapement fig. 14, was invented by Geo. Graham, about the year 1700, though an escapement similar in principle had been previously invented by Tompion, the latter being the first dead-beat escapement applied to the watch. The advantages of the cylinder escapement, as compared with the verge, were obvious and numerous, although the latter was not quickly superceded by it, as the difficulties of its manufacture rendered it unpopular. The peculiar adaptability of it for very flat and small watches was soon perceived by the Swiss, and in the latter class of watches it is a favorite with them at the present day. One property which the horizontal escapement possesses, and which renders it peculiarly adaptable for the going barrel is, that it is not so much affected by any change in the motive power of the watch as any other escapement, the frictional rest of the tooth on the cylinder exercising a compensating power over the extent of the vibrations, so that any addition to the motive power is attended with additional friction on the cylinder, while the balance is performing the supplementary arcs of vibration, and so retarding it and compensating for the additional force of the impulse. This isochronizing power was what especially recommended it to the Swiss, who saw the possibility of suppressing the fusee with which they had never been in favor.



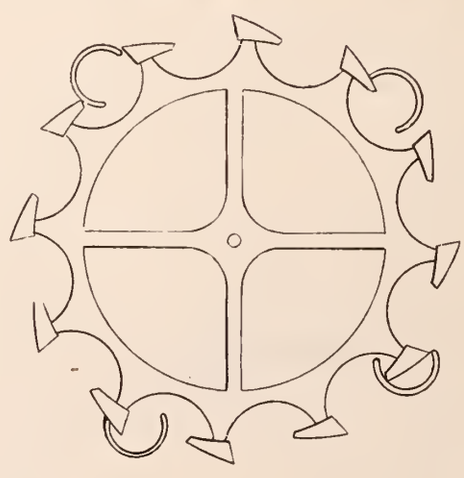


Fig. 14.

(*To be Continued.*)

Taking the Mote out of one's Eye.

A European exchange says that an iron or steel splinter was recently removed with the magnet of a dynamo machine. An iron splinter lodged in the eye of a workman, Mr. Brown; an English electrictan met him, and when informed of the accident, took him into the machinery room, directed the injured man to place his eye as closely as possible to the pole of a magnet, after which he turned on full power, and succeeded in this manner to withdraw the splinter. The *Electrotechnische Anzeiger* remarks that it is the opinion of an excellent oculist at Berlin that iron splinters can be withdrawn from eyes or wounds only when they are only loosely imbedded. A splinter that has penetrated into or fastened itself by burning in the eye, cannot be gotten out by even the strongest magnet unless an incision be previously made.

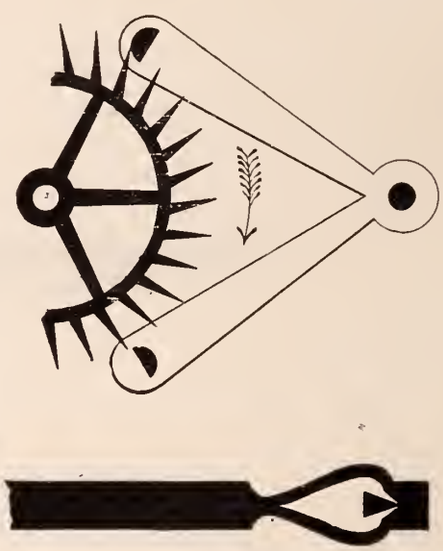


Fig. 13a.

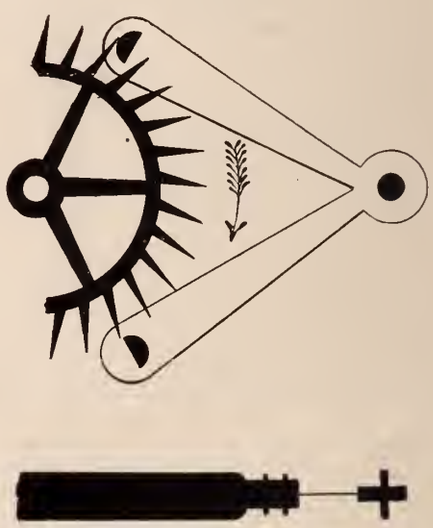


Fig. 13b.

Diamond Stealing at the Cape.

Few persons, says a private letter, except those who have lived at the Cape, have any conception of the enormous loss to the legitimate owners and workers of the diamond mines, caused by the traffic in diamonds stolen by the native diggers employed in the mines and sold by them to the I. D.B. (illicit diamond buyers). Containing as it does greater value in smaller bulk than almost any other known substance, the diamond offers special facilities for concealment, and the native digger is not slow to take advantage of this fact. He develops a degree of astuteness in their concealment that would grace the best pickpocket of the East End of London.

Cab Clocks.—The prefect of the Seine, Paris, has named a commission of twenty to examine the project of introducing counting clocks into the public hacks. Paul Garnier and Redier (two able watchmakers) are part of this commission. There are about ninety competitors ready to show that his peculiar style of clock is the best possible.



A PATENT SPECTACLE FRAME HINGE.

The drawings below show five different modifications of a new spectacle hinge, patented Feb. 18, 1890, by W. X. Stevens of Washington, D. C.

FIG. 1.



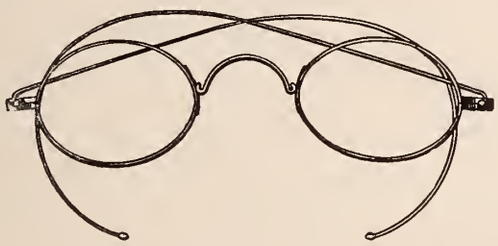


FIG. 2.

Fig. 1 is a view looking down upon the top edge of a pair of spectacles. Fig. 2 is a rear side view of the same with another style of bows. Fig. 3 is an interior view of the open joint, showing one form of the invention. Fig. 4 represents a modification, as seen on the inner face of the joint, the bow being in longitudinal section in the main view, and also shown on its flat side at the right. Fig. 5 is a detail view, partly in section and part in side elevation, showing another modification with two styles of bows adapted therefor. Fig. 6 shows yet another modification, partly in plan and part in side elevation.

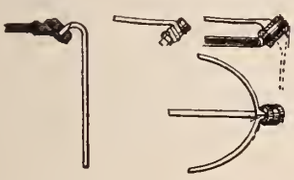


FIG. 3.

FIG. 4.



FIG. 5.



FIG. 6.

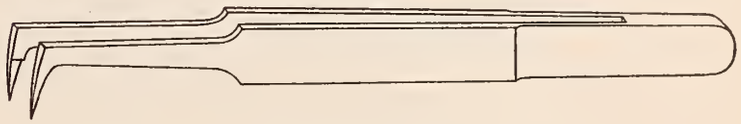
The main characteristic in every case is the slant of the hinge-pins on which the bows turn to open and shut. These pins are set at an angle of about 45° with the general plane of the spectacles, so that each bow, in being opened, describes an arc of a half cone, and may be moved either up or down to open or close it. This movement is entirely new. While the spreading of the bows to engage the head of the wearer tends to hold the glasses rigidly in their normal position for service they may be a little canted either way, if desired, by twisting the ends of the bows.

Spectacles provided with this style of joint it is claimed will never in service be apt to tip out of their proper plane, no matter how loose the joint may become by wear. The joint is simple, strong and durable. The patent also covers a feature of minor importance, consisting of the two half-round ends of the rim being brought together as a cylinder and set at the said angle to form a journal upon which the bow is hinged, one screw nut holding the two parts close together and serving as the inner shoulder of the bow bearing, and another nut on the outer end serving as the outer shoulder. This arrangement forms a firm clamp on the glass and is a very strong joint.

A HAIR-SPRING COLLET REMOVING TWEEZERS.

For the purpose of easily removing the most obstinate hair-spring collet, with hair-spring attached, from the balance arbor without the least danger of springing any delicate wheel or injuring the pivot, Jerome R. Graves, of Corry, Pa., has devised a new hair-spring collet removing tweezers, an illustration of which is given below, and upon which he was granted letters-patent on Feb. 25, 1890.

The essentially new features in this invention lie in the jaws, which turn out at right angles at the ends to the prongs or legs like feet. These jaws are beveled inwardly on top, while the lower face is straight or horizontal. The inner edges of the jaws are parallel



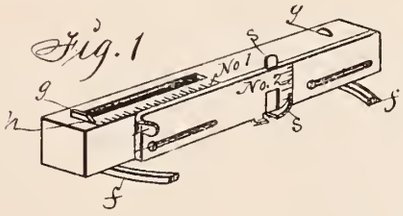
for some distance at their base, and then divergent toward their points, so that when the two jaws are brought together they will impinge upon each other at the heel or base, but not meet at the toes or points. Those parts of the points which have the diverging edges are the working-faces.

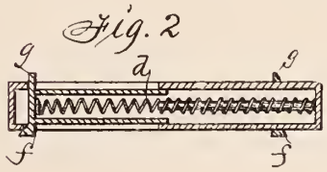
In using the tool the operator slips the jaws under the spring with their points under the collet, and by pressing the legs of the tool together the beveled edges of the jaws are forced in between the collet and the balance-wheel, and acting like wedges, force the collet up. The object in having the edges divergent or offset, is to prevent the jaws from injuring the pivot of the staff when the collet is forced off.

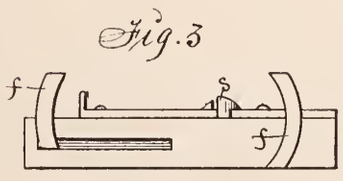
CALIPERS FOR FITTING WATCH CRYSTALS.

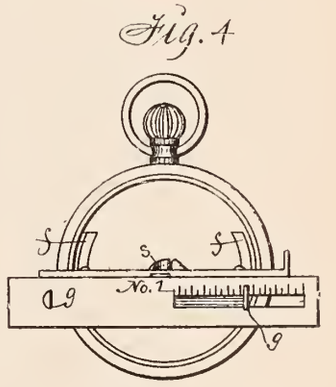
To save time and labor in selecting and fitting a watch glass of proper diameter and depth, and to obviate the annoyance incident in handling, measuring and fixing glasses in the bezels of hinged cases, Andrew Nylen, Des Moines, Iowa, has invented and patented a calipers which appear to possess many points of excellence.

The calipers are adapted to be placed upon a watch and adjusted relative to the bezel of the case that is to receive the glass, in such a manner that the precise diameter of the required glass will be indicated by a pointer and scale; and also in such a manner that the dish or height of the glass at its center relative to the center-post and dial-pointers of the watch will be indicated by another pointer and scale.









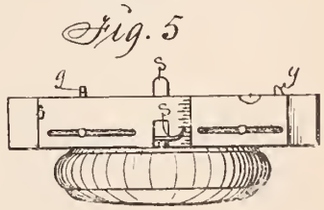


Figure 1 is an isometric view of the complete device. Fig. 2 is a longitudinal sectional view, and fig. 3 a bottom view. Fig. 4 shows it applied to a watch to get required diameter of a glass; and fig. 5 shows how the height of the glass is indicated at the same time by the pointer and scale at the side of the device, while the diameter is indicated by the pointer and scale on the top. By an examination

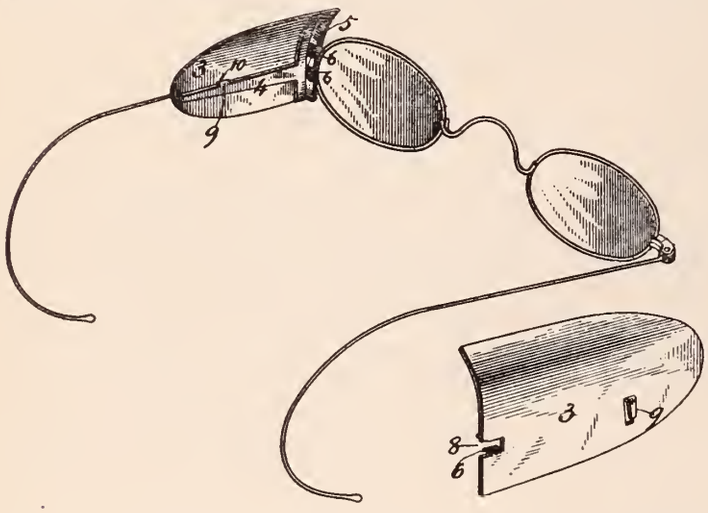
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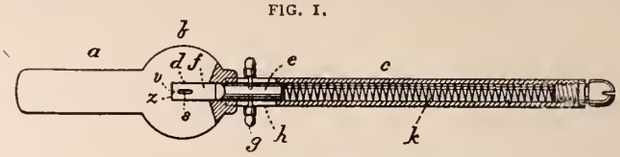
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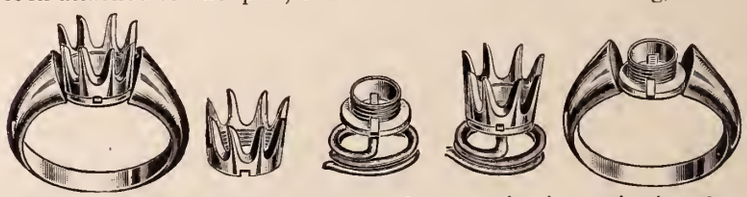
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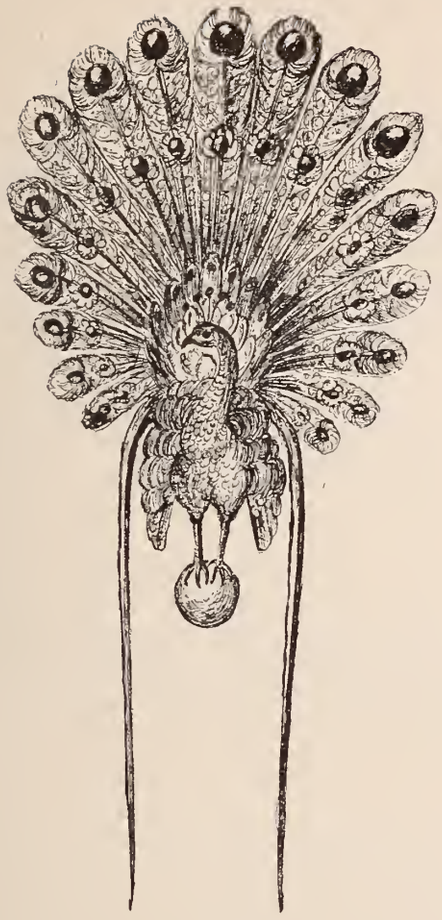


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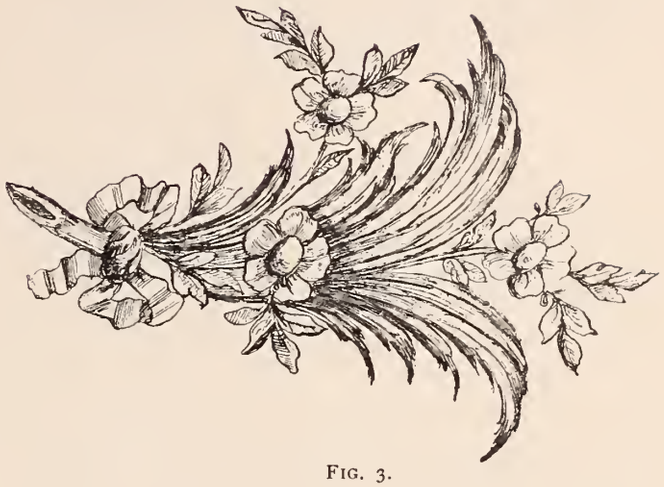


Fig. 3.



Fig. 5.



Fig. 6.

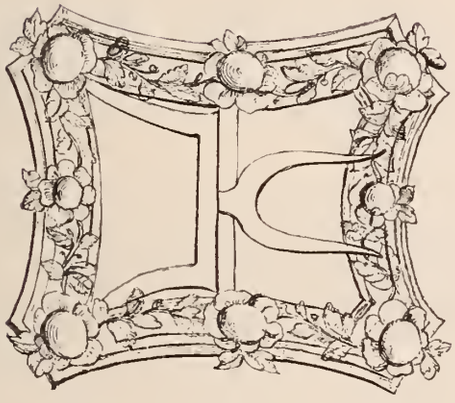


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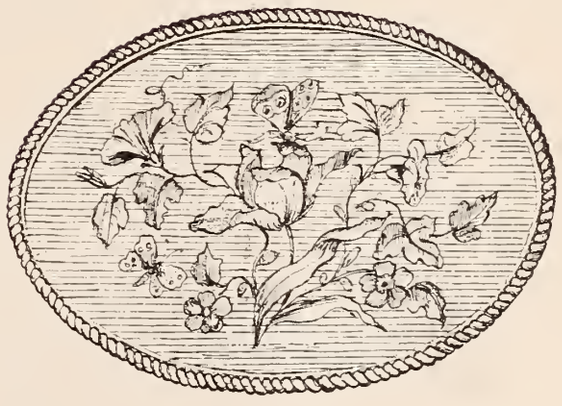


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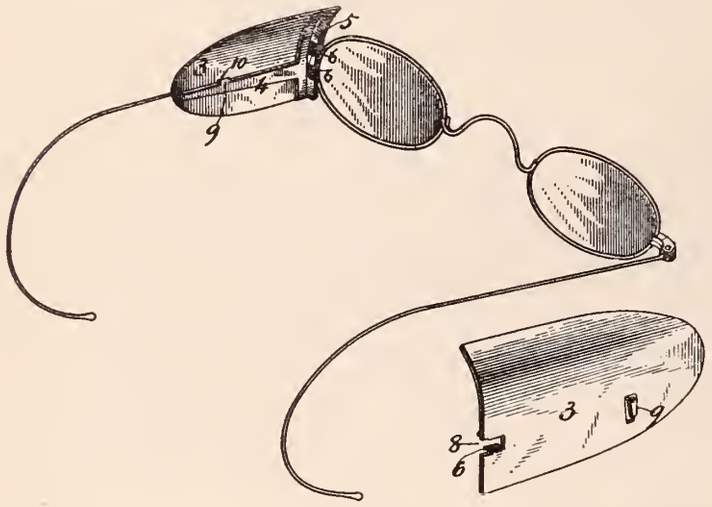
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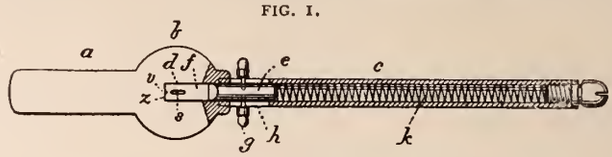
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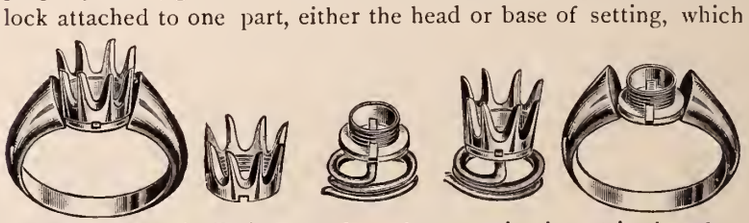
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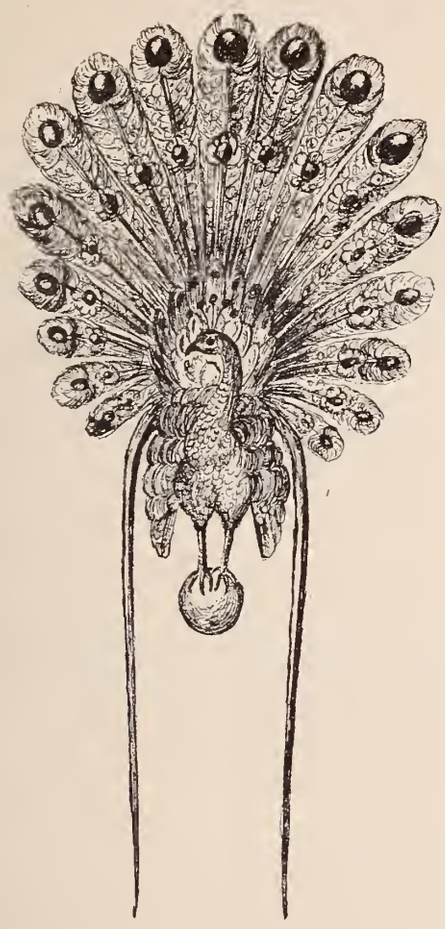


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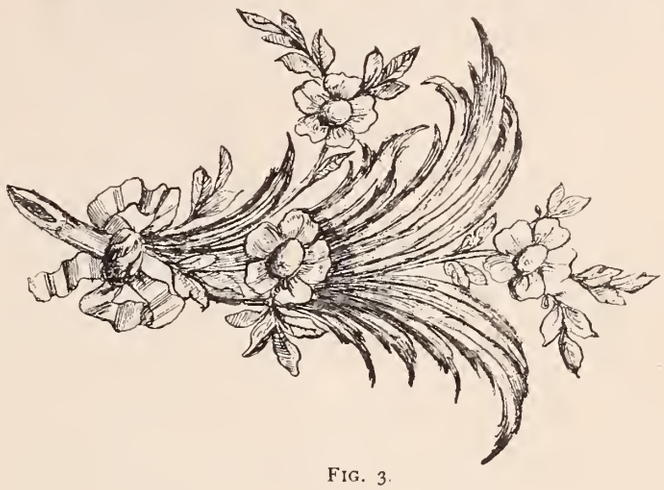


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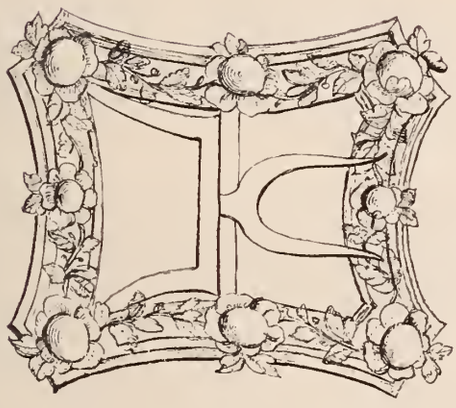


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Fashions in Jewelry

A Lady's Rambles Among the Jewelers.

THE refinement so conspicuously remarked in the present modes of jewelry assumes many interesting forms. One of them has been previously noticed—the imitation of fine laces worked out in small meshed silver and gold, with diamonds used to define the design. A refinement even of this is seen in the metal imitation of Brussels net which is left clear except for the dainty ornamental edges which are worked out in fine diamonds

*** *** ***

THE best instance of jewelers work of the above sort is a band for the neck, beneath which a necklace may be also worn. This band simulates in gold a box plaited ruche of Brussels net about an inch apart. Both edges of this ruche are defined by a light and graceful pattern which is made up of fine diamonds. Such a band could be admirably worn by women whose necks are a trifle long. The Princess of Wales, who has such a neck, always wears a band of some kind above her necklaces. Usually this is of black velvet powdered with diamonds. This gold and diamond ruche would make an admirable substitute.

*** *** ***

A PAIR of diamond shoe buckles is another instance of such work. The term buckles is perhaps misleading. They are rather lace ends with a buckle clasping them together. The ends are round and slightly oblong, and are of silver net sown with diamonds, and modeled after the black Brussels net bows sown with jet beads that are often seen in slippers. The oval buckle is a novelty; its center has a large faceted oval of rock crystal set round with a closely set framework of diamonds. The rock crystal mingles effectively with the diamonds. These bows, it should be added, can also be used for shoulder knots.

*** *** ***

THE pride of some prominent jewelers is the creation of unique pieces which are rightly works of art. These are, as a rule, suggested by some uncommon gem, which determines also the object of the piece. For example, here is a fine specimen of uncut sapphire, pear-shaped, two inches long and irregular. To cut into it the ordinary faceted gem would require a large waste of the precious stone. Accordingly it is left *en cabochon*, and is mounted as a hair pin on amber shell prongs and is gracefully enriched with diamonds. The design is skilfully arranged to admit of a diamond loop, so that the sapphire can be detached and used also as a pendant.

*** *** ***

IN ANOTHER case a pair of large uncut emeralds, also pear-shaped, flat and unusually large fall into the same hands. Accordingly they form the motive of a new piece. They are the wings of a large pearl of similar shape, and are connected by flowing foliations by means of diamonds. This also makes a sumptuous hair pin, and a piece that could aptly be placed in a collection and go down to posterity.

*** *** ***

LARGE yellow diamonds are used in special pieces in combination with smaller white water diamonds. A magnificent brooch has for its center a large yellow diamond one inch by three-quarters of an inch in size. This forms the center, and around it are small yellow diamonds working out certain forms of the design, while smaller white diamonds are used in the connections and in the finer outlying forms.

ANOTHER unusual and artistic piece is an aigrette in which the center is a triangular diamond at least one inch across the base. The diamond has a faintly yellow tinge and has a table facet. Geometrical forms surround it which are filled in with small triangular diamonds and cabochon rubies. The general form of the piece is triangular, and a slender, tapering and slightly curving spray is carried up upon the feathered part of the aigrette, and is made up of alternating cabochon rubies and triangular diamonds.

*** *** ***

PALE sapphires *en cabochon* are used lavishly in jewelry intended for evening wear, their beauty being displayed in artificial light, as is not the case with the deeper tinted sapphires. An example of this is seen in a neckband or collet in deep tinted *repoussé* gold copied from antique forms. The jewels are carried in diminishing lines in the center of the long scroll-like forms, diamonds and cabochon sapphires alternating.

*** *** ***

CABOCHON pale tinted rubies are used in the same way, in combination with yellow gold in rich forms. The ruby remains the gem of the hour. A pigeon's blood ruby exceeds a diamond of equal size and purity, in price. The tint, which is light and has the merest feeling of yellow in it, is much more brilliant at night than the deeper tinted stones and those lighter rubies that have a purplish tinge.

*** *** ***

COLORED stones are used for jewels that are to accompany costumes. A necklace for a costume is a fine gold tape from which hangs a row of hyacinth. Similar necklaces have rows of different colored stones, such as topazes and ruby spinelles, being accented here and there by a sapphire and an emerald.

*** *** ***

A WREATH of diamonds is designed to wear around the neck. Despite the beauty of the work and the graceful design which follows nature closely, conventional designs or pendant forms seem more appropriate and becoming.

*** *** ***

THE crescent as an ornament has of late rather lost favor, but a crescent of white onyx cut with Cupids and nymphs in relief and surrounded by diamonds deserves mention.

*** *** ***

A PERFECT work of art is a long oblong moonstone in which is carved a representation of Venus Anadyomone, surrounded by loves and set within lines of small diamonds.

*** *** ***

A BEAUTIFUL specimen of jewelers work is a large dragon fly in which the long wings are made of gold lace and have a large emerald in the tip end of each; the vertebrae are made of sections of emerald, the cartilage of diamonds, while the head is composed of a diamond and pearl. Such a jewel is used in catching up lace draperies with charming effect.

*** *** ***

WHILE exquisite workmanship is conspicuous in most jewelry, there are some brooches made of heavily twisted nuggets of gold. Sometimes small jewels are sunk in these, giving scarcely more than gleams of color.

Some of the prettiest aigrettes have the feathers simply powdered with diamonds; occasionally small sapphires and rubies are scattered among them.

*** *** ***

Antique forms are conspicuous in rings which are very large and rich. The gold is yellow and richly chased, and is chiefly seen in the lower edge of the ring, and appears to merely hold a design which is usually wrought out in different stones and spreads out and toward the knuckle. Sometimes this design is so large that only one such ring can be worn on the finger. Its design is tiara shaped or may have been copied from some crown. They are remarkably rich and attractive.

*** *** ***

The suggestion of headpieces is carried out in less expensive rings. The pointed hood of Marie Stuart is suggested in slender pointed bands set with pearls and cabochon rubies, with sapphires between slender lines of gold.

*** *** ***

Men's rings are larger and richer than ever. They are usually of deep yellow gold twisted and chased, and set with large emeralds, rubies and diamonds, used separately or combined.

*** *** ***

The beauty and large number of rings now worn by men can be seen in every place that men frequent. These are worn on the third and little fingers of the right hand, the same now adorned by women. Men do not always wear masculine rings. Diamond solitaires mounted like those in ladies' rings are frequently worn on the third finger, and circlets and odd rings set with smaller stones on the fourth finger. On the contrary, there are many women who select with great care and wear fine intaglios and reliefs.

*** *** ***

A new brooch is a bow of gold net edged with diamonds.

*** *** ***

False pearls come in eccentric shapes that can often be ingeniously utilized. A nugget almost as large as a small hen's egg is changed into a steer's head by inserting eyes of black onyx, horns of gold and binding it with a gear of fine gold chains. Another smaller pearl with a curious likeness to the conventional Irishman, was further improved by a cutty pipe, sparkling eyes, and a line of diamonds suggesting a rakish cap.

*** *** ***

The sporting element is still conspicuous in jewelry, and in pieces where one would scarcely expect to find it. For example, a diamond necklace has for its chief ornaments three pearl-set stirrups, not as pendants, but stretched across the throat.

*** *** ***

A watch chain is made of a gold and silver bit attached at each end to stirrups of silver.

*** *** ***

Lace pins are not greatly worn, but here is a novelty—a pea pod with a calyx of diamonds. The pod is of jade and is natural in color. A similar pin suggests the half opened pod by a row of pearls which we may assume are the peas.

There is but little change in bracelets. Knife-edge circlets set in precious stones, and deep tinted gold in antique forms in which diamonds, rubies and sapphires are sunk are the popular forms.

*** *** ***

Things that are useful as well as ornamental are girdles with wreaths of enamel.

*** *** ***

Sleeve links are made in the form of white beans.

*** *** ***

Mourning bracelets are made of flat segments of lustreless onyx fastened by gold bars.

*** *** ***

The Florentine fillet that has just been introduced is among the most graceful adornments for the hair now worn. It is light, flexible and in gold is especially becoming to blonde hair, the color of which it seems to make richer.

*** *** ***

Card cases in the new and dainty skins that have come recently into use are finished with a border of gold lace laid on to the leather. The pattern on the edge is picked out in fine diamonds.

*** *** ***

Madame Recamier, the Duchess of Devonshire, the pretty girl of the Cruche-Cassée by Greuze, are inserted amid the perforated ornament of gold that border memoranda and pocketbooks.

*** *** ***

Amber shell clasps for the Cadogan knot are covered with lace work of diamonds.

*** *** ***

Razors with *repoussé* gold handles are eloquent of the luxury of the age.

Novelties in Silver.

Russian silver is gaining more and more prominence, and is introduced in articles of every description. The large silver damovars have bands of Russian letters which presumably unite to form a suitable legend. This is the only ornamentation, the rest of the surface being merely polished. Russian silver is understood to mean that peculiar treatment in enamels seen in Russian work. This is of the most varied description and is extremely ornamental.

*** *** ***

Fruit sets, coffee sets, bonbon trays and spoons or tongs, slender urns, small trays, jewel boxes, card racks, small trays in Russian silver are interesting and desirable. At most but two or three pieces should unite in a set.

*** *** ***

Knives and forks with handles of Russian silver are novel.

*** *** ***

Baby sets of knife, fork and spoon of Russian silver are among novelties. The spoons have deep round bowls, and are comparatively large for small hands.

For afternoon tea in boudoirs and Louis XVI. drawing rooms, are delightful little cream and sugar dishes with garlands of *repoussé* work.

*** *** ***

Silver coasters are used on the table for flowers. Orchids are placed in silver; they combine better with metal than porcelain or glass.

*** *** ***

Silver files on *repoussé* bases are a necessary adjunct to a lady's escroitoire.

*** *** ***

Silver letter clips mounted on blocks of colored ivory belong to a properly equipped writing desk. The larger letter clips are very handsome. They suggest birds with outspreading wings, and are firmly mounted on blocks adorned with enamel.

*** *** ***

A pretty pair of silver candelabra are about half the usual height, the stems curving upward from the base and interlacing. Candelabra are essential now to every table at which any form is observed.

*** *** ***

Silver bonbon boxes hang at the end of numerous chains that have a means of attachment to the belt.

*** *** ***

Silver buckles are even more fashionable and sought as presents. The long curved buckles used in the fronts of gowns are in charming styles. Buckles of Russian silver of odd form are used for belts and clasps.

*** *** ***

Mirror frames of silver in rococo styles are among the luxuries of the toilet. Frames of open work designs in silver and silver gilt are placed on plush and surround small mirrors and photographs.

*** *** ***

Silver is combined with wood, onyx, ivory or some other substance in umbrella handles. In one design the silver expands into a hood which covers a man's head of carved ivory.

*** *** ***

With Easter comes a great variety of silver crosses. The Russian or Greek and Celtic crosses are the favorite forms.

*** *** ***

Silver mounted pistols are decorated in niello work with suitable designs.

*** *** ***

Heavy silver-linked bracelets as settings for tiny watches are a strange fashion which is steadily gaining adherents.

*** *** ***

Silver tablets in the form of a butterfly are dainty trifles.

*** *** ***

Perforated silver in floral forms etched in black form the backs of devotional books.

*** *** ***

Folding photograph frames have silver backs. These are ornamented in niello work, and have the word "photos" in ornamental letters placed diagonally across the face.

Bric-a-Brac, Art Glass and Pottery.

Russian bronzes, spirited and picturesque, still retain their hold in artistic circles.

*** *** ***

A beautiful jardiniere is round and modelled in spiral forms. Over this is a chased and perforated decoration of waves, shells and other marine forms. Two clinging crabs form the handle.

*** *** ***

Flower fans are the latest caprice. Violets, pansies, lilies-of-the valley are fastened on to the fans, and are very cleverly arranged to fold up, although they do require a larger box.

*** *** ***

Stained ivory seems to be superseding the pure white material. Every sort of toilet implement is found in this new form, and often exquisitely carved.

*** *** ***

The tall vases that are now used as lamps are encased in a framework of brass that is very ornamental. These deep yellow blue and vivid colored jars are very handsome when the globes and shades follow the bowls in color. Lamp globes of colored glass are tall and oval rather than round. A fine example of one is a pure toned green with fine parallel horizontal lines about a quarter of an inch apart. They have a brass ornament at the top.

*** *** ***

An oblong mirror of bevelled glass has a frame made of interlaced wrought iron in sections. Wrought iron now almost rivals jewelers' work.

*** *** ***

Glass ewers with incised designs in gold are very beautiful. There is also a demand for enamelled glass and toilet bottles are covered with trailing designs in enamel. No woman's toilet is considered complete without a set of cut glass toilet bottles with silver tops. In some cases the top is made to fold over the glass bulb like the calyx of a flower.

*** *** ***

Liquor flasks in cameo glass are of dark wine color, and are decorated usually with white flowers.

*** *** ***

The spring is reflected in the china table services now brought out. These are sprinkled with little posies like old-fashioned chintz calicos.

*** *** ***

Tiny vases scattered through a house for posies are one of the pretty fashions we bring from France.

*** *** ***

Beakers of old German glass are sought after for cabinets. Ladies who do not aspire to be great collectors are industrious hunters after small pieces of fine old china, enamelled glass and Japanese snuff bottles.

*** *** ***

Vernis-Martin tables and cabinets are greatly sought after in the lighter styles of furnishing that now prevail. The American manufacturers are beginning to reproduce them handsomely, and their work is designed to stand our climate.

*** *** ***

Large cut glass punch bowls mounted and rimmed in silver are attractive and novel.

Elsie Bee.

PARIS GOSSIP.

[From Our Special Correspondent.]

NUMEROUS NOVELTIES PREPARED IN EXPECTATION OF GOOD SUMMER TRADE.—SILVERSMITHS AND THE 18TH CENTURY STYLE.—A BEAUTIFUL 16TH CENTURY CANDELABRUM.—AN INTERESTING PAPER ON THE ORIGIN OF THE DIAMOND READ BEFORE THE ACADEMIE DES SCIENCES.—THE GORHAM CO. PRESENTS A HANDSOME SILVER SET TO THE MUSEE DES ARTS DECORATIFS.

Paris, March 10, 1890.

Business is still rather quiet; but, as it has never been very bright at this time of year, there is no reason to grumble for the present. Our jewelers are pleased to hear that a great animation reigns in fashionable circles at Nice and Cannes, and they feel confident that our high society will return from the Mediterranean shores with a strong appetite for balls and parties, rather increased than diminished by their present indulgement.

NOVELTIES FOR THE BON MODE.

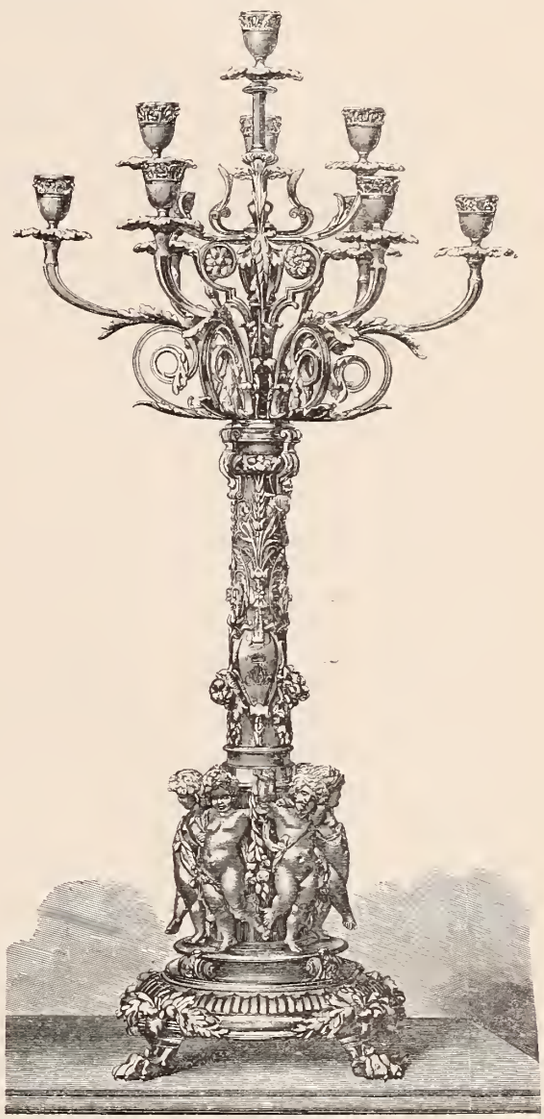
What kind of novelties could be devised to attract the attention of our fastidious ladies, on their return to the capital? I have seen here and there at shop windows: an Egyptian necklace, with lotus flowers alternating with scarabees; a Greek diadem and an Etruscan bracelet; besides a large quantity of rings, brooches and pendant earrings, in the fashions of the sixteenth and eighteenth centuries. I remarked also several chatelaines in Renaissance style, and some in the Louis Seize, one of which consisted of flowers and ribbons. If our jewelers could agree with prominent dress makers in reproducing complete costumes in the most elegant among the ancient styles, the results might be very interesting, and perhaps meet with the approval of high society. I believe that our duchesses and bankers' wives would then consent to purchase new jewels, instead of insisting on an everlasting re-arrangement of stones, with a view to obtain novel effects *à bon marché*. Several among our fashionable jewelers have enough influence over the minds of their fair customers to easily persuade them to buy complete sets, well calculated to enhance their beauty, I am sure that, among the leaders of fashion, it would not be difficult to find more than one ready to admit that nothing could be more brilliant and original than a *bal costumé*, at which every one of the ladies would be dressed and adorned (according to the style of her countenance) like an ancient queen or princess, from Cleopatra to Hortense de Beauharnais.

A HANDSOME 16 CENTURY CANDELABRUM.

Silversmiths are still plodding on the same track. The eighteenth century they consider an inexhaustible mine. Yet, several among them condescend to look a little further back, and, although they soon learn that it is far easier to produce an average Louis Quinze tureen or basket jardiniere than a small Renaissance piece, they are not discouraged by the discovery. When a purchaser happens to remark that a rococo ornament is not well proportioned or appears out of balance, he receives the answer: *c'est voulu*; (what would you have?) and he is at a loss to prove that it ought not to be so. But with works made in the fashion of the sixteenth century it is entirely different. However intricate may be the ornaments, there are absolute rules of harmony which, on any consideration, cannot be transgressed. The candelabrum reproduced here belongs to that style, and, although the design cannot be considered as very bold, yet we may look upon it as a most elegant specimen of the genre. All the floral shootings and runs are neatly rendered, and those chubby little beings dancing, hand in hand, at the base of the column are very graceful in their various attitudes. All the parts from the base upward are in correct proportions, and the well rounded branches thoroughly complete the effect.

THE ORIGIN OF THE DIAMOND AGAIN.

At one of the last sittings of the Académie des Sciences, Mr. Daubrée read a very interesting paper on the origin of the diamond. According to his statements, the large quantity of diamonds yielded by the mines at the Cape, is nothing when compared with what must exist at a great depth in the earth. The fact that that precious stone is found in South Africa, surrounded with substances entirely different from those among which it generally lies in Brazil and India, struck several scientific men. At the Cape, diamond together with a large quantity of rock fragments, is said to have been violently thrown up from the bowels of the earth, through natural shafts nearly circular in shape, and looking as though they had been neatly dug by a mechanical process. Those shafts open through a very thick strata of slate, which alone, a most powerful effort could have parted. Yet it was remarked that the rock fragments had not come up in one single shot. It has been observed after the removal of the valuable rubbish filling it up, that each pit bears on its walls marks of



SIXTEENTH CENTURY CANDELABRUM.

consecutive eruptions easily recognizable from each other, on account of a difference in the color of those traces, and also in the matters they consist of. A further examination of those up-running tracks shows that they must have been opened through the action of water and not of fire. Ascending currents of great violence are supposed to have carried up those rock fragments from the remotest depths of the earth.

On one occasion, a diamond, found encrusted in a rock of a greenish black, led some scientific men to believe that the original matrix of the queen of stones was at last discovered. Unhappily our too hopeful savants were soon convinced (after examining the specimen in question) that the diamond had been accidentally forced into the rock, together with some other substances. Later on they came to the conclusion that all those diamonds must have been gen-

erated in the very place where they are found, amid the fragmentary masses surrounding them. But it was observed that, if this were to be admitted, it would be difficult to account for the broken state in which they often are found, especially as the parted pieces are seldom found quite near each other. According to all appearances, insists Mr. Daubrée, diamonds have been brought to the surface by a physical power, from the lowest depths of the earth, along with the various matters covering it. From the nature of the stones and minerals, filling up the shafts, it must be admitted that diamond comes from the infra-granitic regions, where a vitreous substance which mineralogists call peridot, is abundantly found. Now, it has been remarked that peridots are seen everywhere, surrounded with lavas, basalt and all kind of volcanic matters. Then, if we consider that, in Australia, the New South Wales diamondiferous bearings, are in the neighborhood of basalt gatherings, we must naturally conclude that other discoveries in that line might lead to the belief that diamonds are generated in the midst of basalt.

As a consequence of these novel ideas, we are told that diamond must have been a fundamental rock of the earth, as old as our globe, and that it is, perhaps, still abundantly existing in its incandescent nucleus, which brings Mr. Daubrée to suppose that it might have been the primary form of carbon in universe. Recent discoveries seem to confirm that supposition. It has already been suspected that meteoric stones contain diamonds. It is now almost certain. The meteorite which fell at Novo-Urei (Russia), September 4, 1886, consisted of iron, nickel and peridot ; but there was besides in it, a carbonic substance, a fine dust as hard as diamond, which turned into carbonic acid, if burnt in contact with oxygen.

Many years ago, an eminent mineralogist, Gustave Rose, proved scientifically the pre-existence of diamond in a meteorite which had fallen at Arva, Hungary, in 1846. Under the influence of special causes, diamond, in that case, had changed into graphite, the primary crystal shape being preserved. Now it is well-known that diamond, under the action of heat, without the contact of oxygen, turns into graphite.

Two years ago, Mr. Fletcher mentioned the existence of crystals or holosideres, similar to those of Arva, in meteoric iron pieces, examined at Youndgin (West Australia), and Crosby's Creek, U. S. The learned English mineralogist gave the name of Cliftonite to those specimens, which he considered as a third state of carbon, to be ranked immediately after diamond and graphite.

These observations were confirmed by similar remarks of Dr. Brezina on twelve pieces of the holosidere of Arva, which belongs to the Imperial Museum of Vienna ; and also by some experiments made, on one of those fragments by Mr. Weinschenk. Previous statements to the same effect had been made by Mr. Terofeieff and Mr. Latschinoff, after they had examined the meteorite of Novo Urei. If we reflect on those two facts : 1st the comparative scarcity of diamond mines, at the surface of the earth ; and 2d the evident traces of that stone in every one of the meteorites, we must, says Mr. Daubrée, come to the conclusion that our globe does no doubt contain incommensurable treasures. The eruptive shafts of South Africa do not, as an ensemble, represent a surface excessive to three hundred thousand square meters, and yet millions of diamonds have been already extracted from them. What is the amount left in store? Those natural shafts must be considered as openings pierced right through the crust of the earth, and leading to those mysterious regions where lies an inexhaustible wealth.

A RICH PRESENT BY THE GORHAM CO.

A few days ago I paid a visit to the Administrateur of the Musée des Arts Décoratifs, and had the pleasure of seeing various articles which soon will be exhibited in a new room prepared for that purpose. My attention was at once attracted by a large case in beautiful black leather, lined inside with fine black velvet, and containing twenty-two different specimens of spoons, forks and knives, in sterling silver. I was highly pleased to read inside the cover the following inscription : "Presented by the Gorham M'f'g Co., New York, to the Musée des Arts Décoratifs de Paris. Compliments of E. Holbrook, Director." This is what may be called a very handsome present, for which the donors must have received the warmest thanks. In a fortnight or three weeks all our high society (what we call *tout Paris*) will receive letters of invitation to witness the opening of the new room at the Musée des Arts Décoratifs, and the attention of the visitors will be, no doubt, especially attracted by the lovely pieces given by the Gorham Co. As a natural result, the company's office in the Avenue de l'Opera, so well known already must receive a large number of visits, and their act of kindness to France will be substantially repaid. It may be added that no other manufacturing house could afford to enrich a museum with a collection at once so varied and so exquisiteiy artistic. JASEUR.

Runs Without Winding.

A CLOCK THAT HAS NO WORKS, YET KEEPS CORRECT TIME.

Fresno, Cal., Republican.

T. G. Farrer, watchmaker with H. G. Watner, has invented one of the most peculiar clocks of the 19th century. It consists of a plate glass dial suspended from the ceiling, and all the parts of it that are visible are the two hands, the pivot upon which they swing, and the dial. It is marked "Gravitation Clock," and not one person in 1,000 who passes it has the faintest idea that it is the most ingenious device of the century. Many clocks with glass dials have had works of a watch as their motive power, but this clock has no motive power that is visible.

Mr. Farrer worked on the invention for six years before he succeeded in perfecting it. He alleges that the only motive power is the gravitation of the earth, and that the clock will run on forever without winding. The only imperfection is that it loses from four to five minutes a day by reason of the friction of the hands on the pivot, and, therefore, the hands require to be regulated once in 24 hours.

He showed a reporter yesterday something about the way the clock worked. When the hands pointed to 1:15 Mr. Farrer caught hold of them, brought them together, and sent them twirling around the dial like the winder of a wheel of fortune. After oscillating until the momentum had been overcome, the hour hand and the minute hand resumed their respective und proper positions, still marking the correct time. At 1:30 he did something still more remarkable. He slipped the minute hand off the pivot and laid it on the counter. At the end of six minutes he replaced it, and sent it twirling around the dial. When it came to rest it settled at the right place, 26 minutes past 1 o'clock.

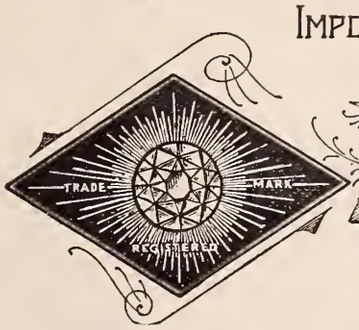
The hands are of tin and are hollow and perfectly balanced on the pivot. Mr. Farrer said they are moved by the gravitation of the earth, but puzzles the spectator to account for the motive power that raises them after they reach 6:30.

All kinds of theories are afloat to account for this. Some people say that the hollow hands are filled with fluids of different densities that overcome the gravitation of the earth when the hands reach that point. But Mr. Farrer keeps his secret, and rejoices over the mystification of the beholder. He insists that electricity is not the motive power.

PAPER WATCHES.—The paper watches appears to be a fixed fact. The following item is making the rounds through the European horological press : A watchmaker of Dresden, Germany, has managed to make a watch from a specially prepared paper. It appears that this substance is much easier to work than any of the metals, and that the watchmaker has contrived to simplify enormously the train, and to produce a movement much less susceptible to disarrangement.

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CLOCK DECORATION.

A BRIEF REVIEW OF THE ARTISTIC FEATURES OF CLOCKS FROM THEIR EARLIEST INTRODUCTION.

By Paul Tonnellier.

(*Commenced in the February Number.*)

PART III.

PERIODS OF LOUIS XIV. AND LOUIS XV.

SEVERAL English collectors possess some remarkable Louis Quatorze clocks. The Hamilton palace collection, sold in 1882, contained a beautiful one thus described in the illustrated catalogue: "a Louis XIV. clock with enamelled dial, chased with medallion of the King and Crown, in a case of red Buhl, surmounted by a figure of fame, blowing a trumpet; with Apollo in his car and other figures in ormolu, and feet formed of horses, resting on red Buhl plinth." In the same collection, there was a clock of the seventeenth century, entirely different in shape and style from those we have seen. It was indicated in the catalogue as a clock of Italian architectural design (with Corinthian pilasters), entirely encrusted with lapis lazuli and agate, and mounted with gilt metal.

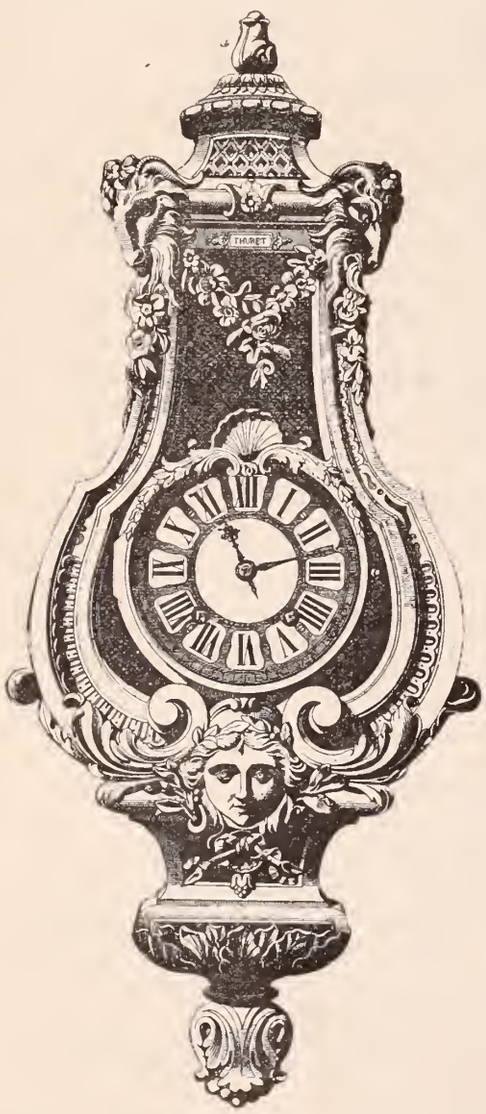


FIG. 13.

Among the numerous specimens of Louis Quatorze clocks scattered in collections and museums, there are some pretty *cartels*, in the shape of a lyre. Our fig. 13 reproduces one belonging to the Marquis of Hertford. It is made entirely of gilt brass, neatly chased with the exception of the center part, on which is placed the dial (partly enamelled) consisting of applied tortoise shell. Although this clock is prettily decorated, it seems of a very simple style, owing to its natural and almost familiar outlines. The shell-like ornament, at the top of the dial is different from those which we have remarked in Louis Treize pieces, and prepares us for the first period of the Louis Quinze styles. As to the goat's head and the drooping garlands, we shall see them reproduced in many different ways on works belonging to the end of the eighteenth century.

Besides those in precious wood, plain or inlaid, with tin and brass ornaments, there were at Versailles, several clocks in gilt-silver. One of them is described, in a memoirs of the period, as being adorned with pretty chasings exhibiting a delicate foliage, some masks and pierced ornaments; having a royal crown at the top, and resting on a square pedestal also in gilt-silver. In the council-room there was a very elegant one, in the shape of an incense burner, with chased ova, masks and foliage; and surmounted with three cupids holding a globe with a crown on it. The console supporting it, also in gilt-silver, exhibited, said the *Mercure*, two little boys with their hands uplifted toward some garlands of flowers hanging from above, and had the arms of France in the center.

A Benedictine, Dom Jacques Alexandre, has written a rather brief description of several clocks belonging to de Servière, a famous collector of mechanical pieces, who lived at the time of Louis Quatorze. One of these clocks consisted of a dome, supported by six pillars resting on an hexagonal stand. Two rows of brass wire ran up in parallel lines, in a winding course, from the base to the top of the dome, thence around the pillars (whose arrangement gave to the whole the appearance of a rotunda). On those wires, attached to the pillars by tiny brackets, rolled a brass ball, which, going all the way down reached a little aperture at the base of the rotunda into which it ran against a spring, which sent it back to the top, retracing all its

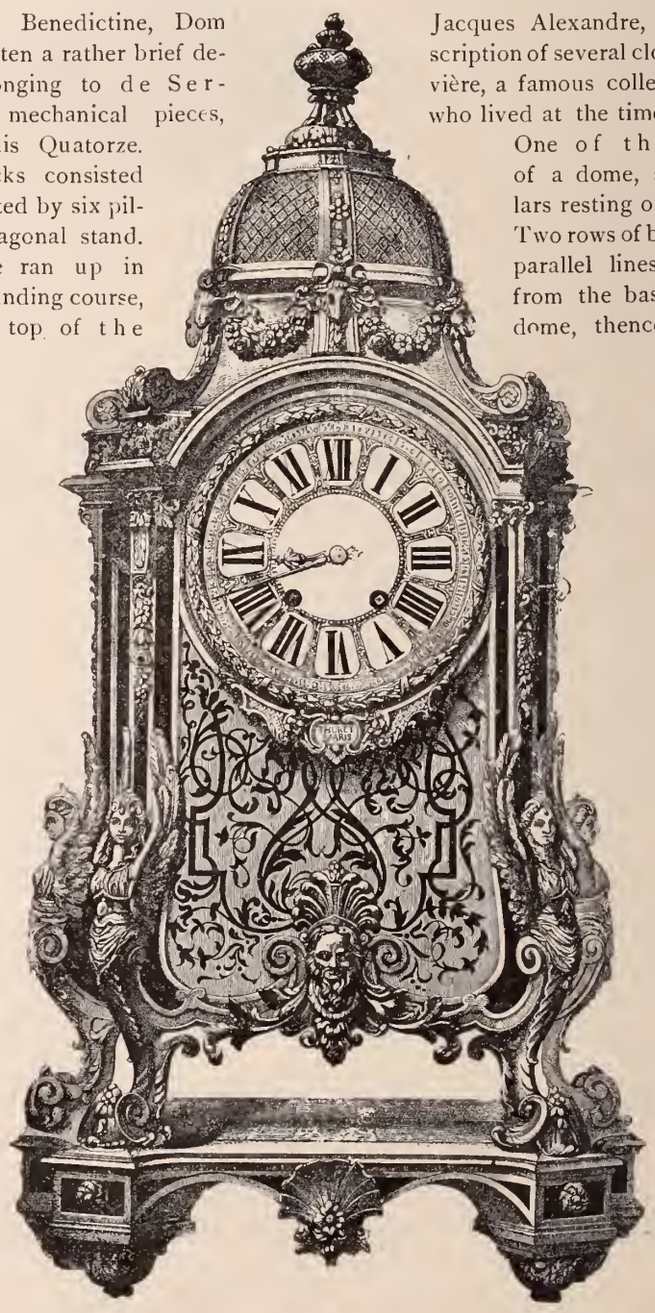


FIG. 14.



Fig. 15.

winding journey on the wires; it then rolled down again, etc This regularly-repeated action set the clock going (by means of the action on the spring, I suppose). The other time pieces (seventeen altogether) were still of more original design; but as Dom Jacques Alexandre does not give us any explanation concerning the mechanisms operating such wonders, under the pretence that Mr. de Servière never would disclose those mysteries, I feel more inclined to believe in his imagination than in his truthfulness.

I think it but fair to remark that in France, in the seventeenth century, the real quality of nearly all clocks consisted merely in the artistic beauty of their outsides. The interior mechanism in quality was very seldom what it should have been. Swiss, Dutch, German, and above all English clockmakers were then far superior to the French ones. Numerous memoirs and records, preserved in Royal Libraries of England, contain detailed accounts of inventions showing the advanced state of horological science, especially during the reign of Charles II. In English palaces, castles, museums, churches and private collections can be seen many clocks and watches, made during that period, and exhibiting most perfect works. Little by little, however, France profited by the inventions of Huyghens, Barlow, Quare, Tompion, and others,and a great improvement was already noticeable in French clocks, at the very beginning of the eighteenth century.

CLOCKS OF THE FRENCH REGENCY.

During the Regence period, there was a general tendency toward the altering of the shapes of clocks. In some cases, the result was very slight, as can be seen from our fig. 14, which, although somewhat different in appearance to those of previous periods, still retains most of the details. Yet it is worthy reproduction, as it is considered as one of the best works of that period, and Mr. Spitzer looks upon it as one of the prominent items of his collection. It is rather high, measuring one meter and twenty centimeters.

Our fig. 15 represents one of the most characteristic pieces in the Regence style. The case of this clock would seem exceedingly high in proportion to its width, if the outlines were not so gracefully curved. As it is, nothing can look more elegant. The shell-like ornaments and conventional foliage are soberly managed, and the figures, even that of the Goddess of War, at the top, have life and grace in them. The cases of these clocks were made generally in rose or violet wood, while the brass parts were of a most artistic finish. Cressent, the worthy follower of Charles Boule, acquired high repute for that kind of work.



Fig. 18.

DELICATE TIMEPIECES OF LOUIS XV. REIGN.

Among the pretty timepieces produced during the reign of Louis Quinze some were very remarkable on account of the excellance of their works, which were made either by the celebrated Julien Le Roy, or according to his directions. Such was the case with the astronomical clock (fig. 16) on which Passement is said to have spent twenty years. Pierre Le Roy, in his *Etrennes Chronomètriques* for 1760, informs us that it

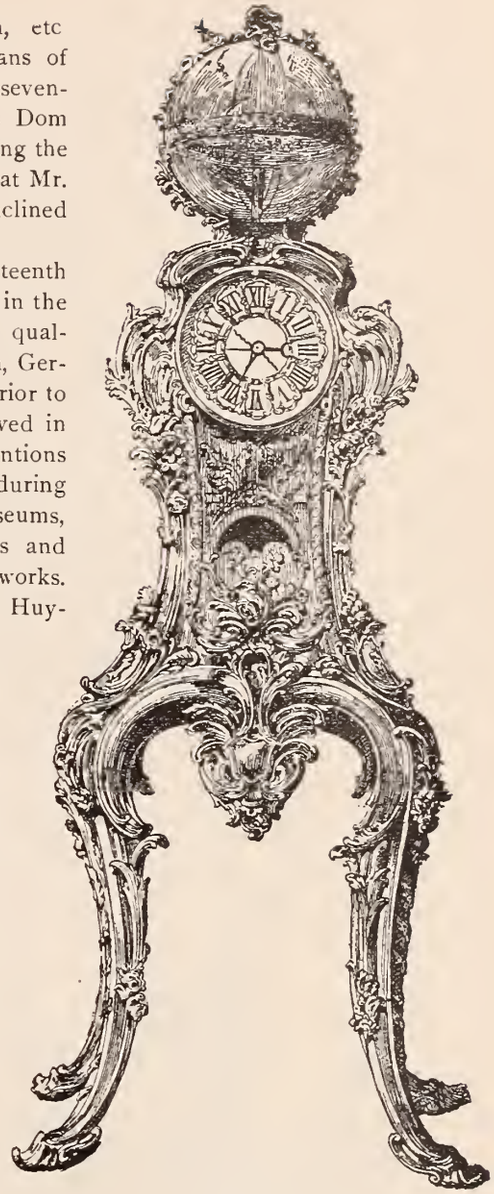


Fig. 16

was considered as a real wonder. Yet modern horologists think that Passement would have done his work much quicker, had he been thoroughly familiar with horological science. From an artistic point of view, this clock, as it stands at Versailles, is very elegant, and can be considered a fair specimen, soberly managed, of the Louis Quinze style. The legs are gracefully curved, and the ornaments, symmetrically arranged, show us none of that unfettered fancy noticeable in other works.

Some timepieces of that period preserve, to an extent, the general outline of Louis Quatorze clocks, with a run of open shell-like ornaments added to it. Our cartel, fig. 17, is one of the most remarkable in that pattern. The case is made of brown laquer, adorned with gilt-brass. The chief object of the maker has been, evidently, to give this cartel a very light appearance, which result has been principally obtained by reason of the glass background of the modillion placed underneath the dial. The whole height is 95 centimeters. I have seen some specimens of that style over-wrought and clumsy-looking, on account of a bad arrangement of the shell-like ornaments.

As we have often remarked, a good artist can make a pretty design with very little material. Examine, for instance fig. 18. This cartel consists of a dial (bearing the mark of Julien Le Roy) all enwrapt with shell fragments and sprigs of flowers. There are two birds near the top, and a cupid seated at the base, bending to one side in a playful attitude.

Some clocks of that period were more elaborate, while several showed on the part of their makers an affectation of science most ludicrously exhibited. One of the latterkind, by Passement, is preserved at Versailles. Its large stand is a thoroughly artistic piece of workmanship, with very beautiful outlines. The top of it is divided from the base by four ornamental feet, with garlands of flowers caught by masks hanging between them. In the center of the base, the outline of which is gracefully curved, raises a pretty urn. The clock consists of a sun, whose rays shoot irregularly from the circumference of the dial. Underneath this we notice a rather bulky moon half buried in a chaotic mass of clouds, etc. Although it was highly praised in the *Gazette de France* of the 2d March, 1754, and seems to have provoked a general admiration at Louis Quinze's Court, there resides in it something ridiculous, which could only be overlooked if we might consider it as a handsome toy. In

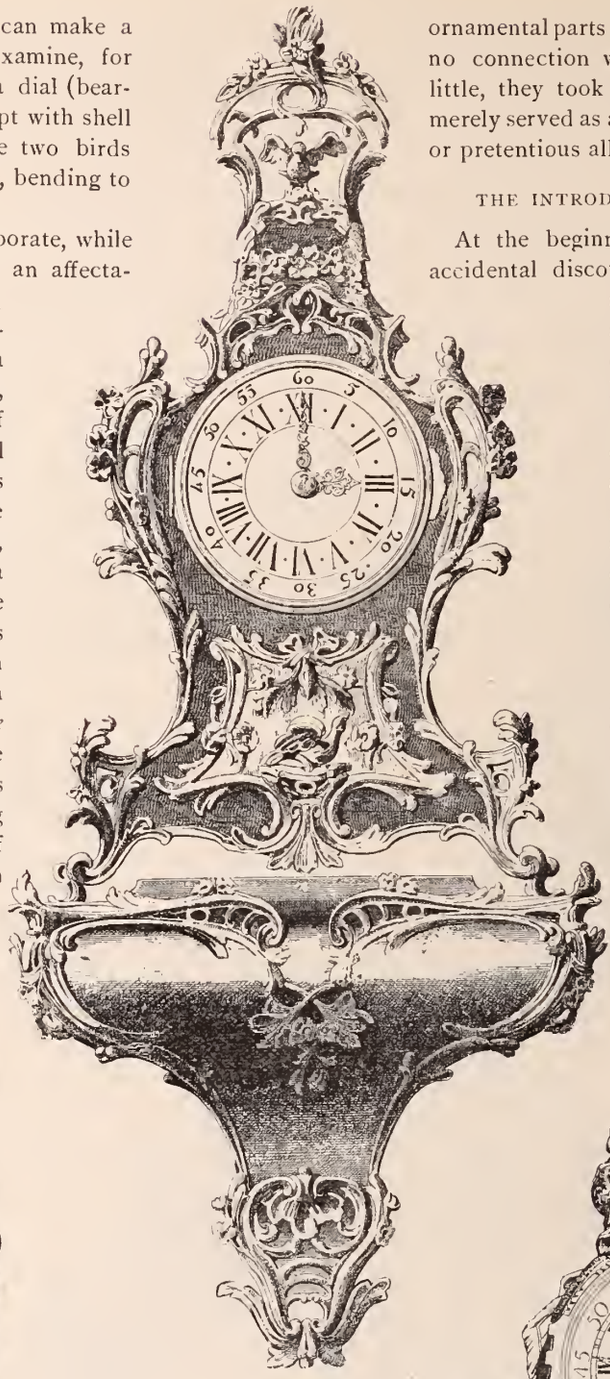


Fig. 17.

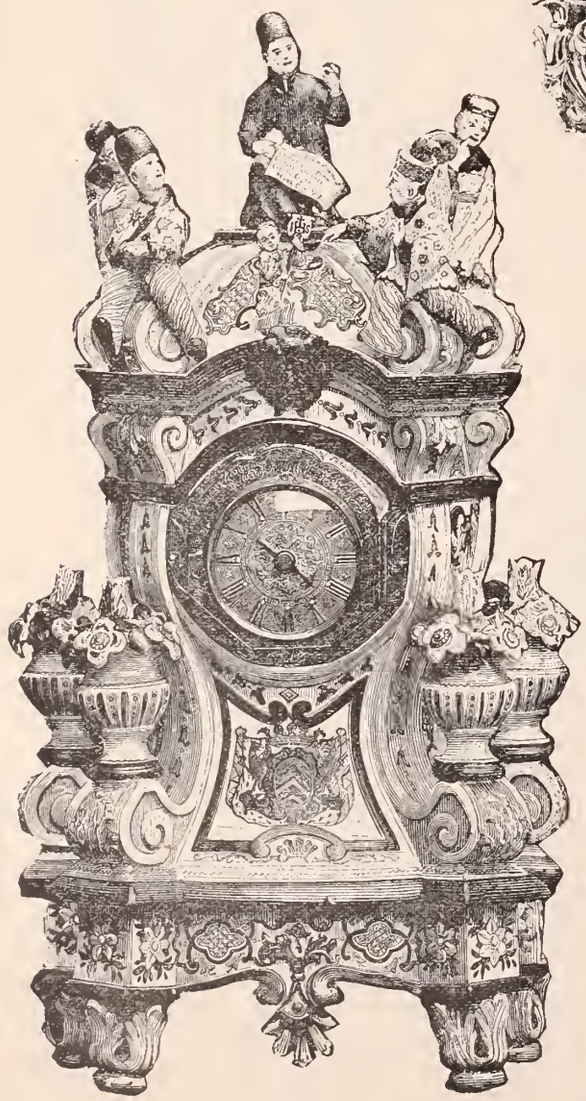


Fig. 19.

1756, Gallien made for the council room at Versailles, a clock representing France crowned by victory, governed bywisdom, and extending her protection to all arts. That allegorical piece was, according to the Duke de Luynes' statement, a thorough'y wonderful piece of work. I am obliged to mention this to show that there was already, at that time, a strong tendency to introduce in the ornamental parts of clocks important elements, having no connection whatever with horology. Little by little, they took the foremost place, and timepieces merely served as an excuse for exhibiting pretty groups, or pretentious allegories.

THE INTRODUCTION OF SAXONY PORCELAIN.

At the beginning of the eighteenth century, the accidental discovery, in Saxony, of a porcelain clay similar to the Chinese kaoline, had also a great influence on the styte of clocks. An important factory, established at Meissen, near Dresden, under the direction of Botticher, produced in various lines a considerable amount of artistic pieces. The genre rococo acquired there a peculiar appearance of lightness, and the delicate tinges of all the parts of the decoration were most bewitching.

I need not describe our clock, fig. 19, the design of which is one of the prettiest. The figures at the top, all exhibit different feelings. It is one of the most ancient patterns, and belonged at one time to the frivolous Marshal Duke de Richelieu, whose arms are in front near the base. Very elegant also is the specimen shown by our fig. 20. It is in Saxony porcelain with gilt bronze decoration. The elephant with a dial on his back was a very successful pattern in those times.

(*To be continued.*)

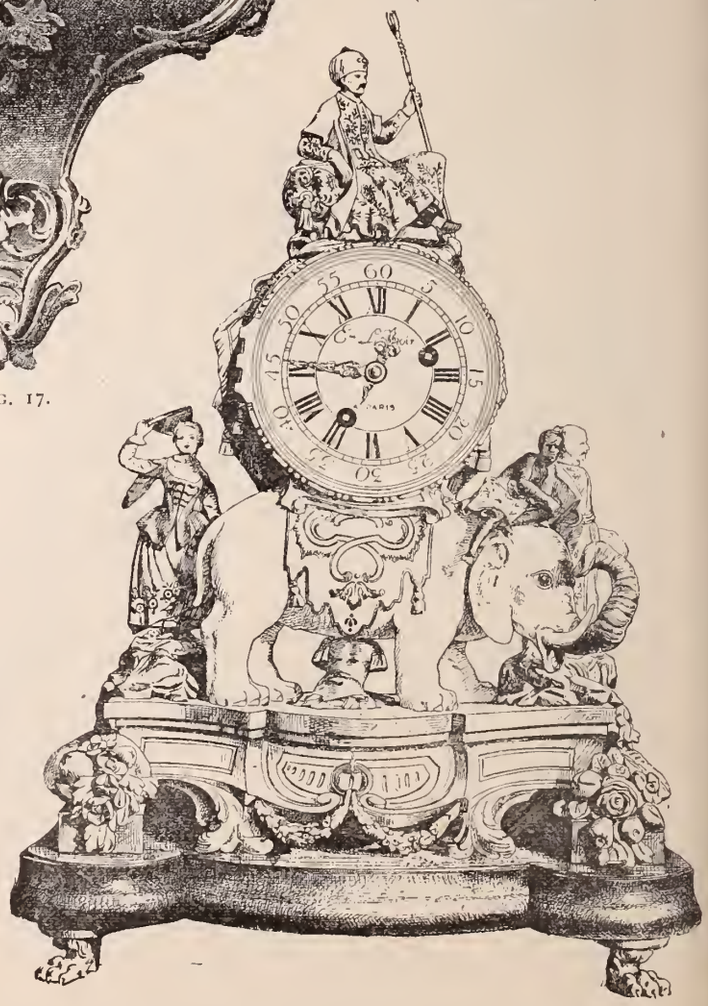


Fig. 20.

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Mechanical Ocular Defects.

Their Nature, Cause, Correction and Relations to Functional Nervous Diseases.

Edited by C. A. Bucklin, A. M., M. D., New York.

[The aim of the author is to produce a clear and thoroughly practical course of instruction on the subject of "mechanical ocular defects," which is entirely void of useless technicalities and within the easy comprehension of every thinking student without his having had any previous technical or mathematical education.]

MYOPIA.



IN OUR LAST number of The Circular we illustrated in a practical way how the soft condition of the globe which leads to the development of myopia is transmitted from generation to generation. The fact that a person not myopic, but born of myopic parents, may marry an individual who is not myopic, and the greater number of the children resulting may be myopic, has its counterpart illustrating hereditary tendencies in the marriages which have taken place between those who are white and those who are one-eighth African. Under these circumstances one child of a large family of children may show decidedly that he is a descendant from African parents, while in no other member of the family is there the slightest trace.

The eye being soft the power which causes it to stretch consists chiefly in the pressure produced by convergence. Persons having soft eye balls who use *both* eyes at the working distance continuously develop myopia without exception. Persons who from childhood use one eye continuously at very near and very fine work do not show the same tendency to become myopic. Thus the Swiss watchmaker who follows his trade from childhood does not show the same tendency to become myopic that the student does who enters the university. Where convergence is used in persons having soft eyeballs, the eyes stretch in proportion to the softness of the eye-balls, consequently the stretching process is greater the earlier in life the tasks are commenced, because the younger the person the softer the eye.

The eyes will also stretch in proportion to the nearness and fineness of the work. Again, they will stretch in proportion to the imperfection of the illumination in which the work is done.

It must also be acknowledged that some individuals are born myopic, while others have such soft eyeballs that they develop high degrees of myopia early in life as the result of such use of the eyes as persons require who never obtain an education or never follow an occupation which in any way tasks the eye.

The statistics existing regarding the refraction of newly-born children are as follows: Jaeger found in 100 children 9 to 16 days old, 78 myopic, 17 hyperopic and 5 emmetropic; Ely found in the eyes of 100 newly-born children, 9 cases of myopia; Koenigstein only found 11 cases of myopia in 600 newly-born children. It is evident that, as a rule, where myopia exists during the first 16 days, it is due to a swollen condition of the lens, which condition disappears in early youth, leaving the individual emmetropic or hyperopic. As a result of Cohn's investigations, who found that among village school children only 1.4 per cent. of myopia existed. It appears that, as a rule, children are not born with myopic eyes, and would not become myopic at a later period of life provided there was no necessity to strain the eyes with near work. Among an uncivilized population myopia is quite as rare as it is among newly-born children.

The best idea we can gain of the influence of occupation upon the development of myopia may be gained from the work of Seggle, who examined large numbers of persons without reference to their position in life as they came up for military examination. Seggle examined 1,600 soldiers; he divided them into four classes in reference to the amount of "near work" their special occupations demanded of them. The first class contained the peasants; the second class, laborers, etc., from the city; the third class, artisans; the fourth class contained merchants, clerks and typesetters, etc.; the fifth cla s contained one year soldiers who are only obliged upon passing a certain examination to render military service for one year. The myopia is in these classes, from the first to the last, found in increasing degrees; 1st class, 2 per cent.; 2d class, 4 per cent.; 3d class, 7 per cent.; 4th class, 44 per cent.; 5th class, 58 per cent. These figures go to show that the chief cause of the development of the myopia is the occupation of the individual, and the youth of the individual at the time the near work is commenced.

The above figures are rather discouraging for those ambitious parents who wish to push with all force their children into literary work at an unreasonably early period of life, and particularly so to those parents who are myopic or who have come from myopic parents.

Myopia in the Schools.

The great work of Cohn is best illustrated by a table showing the results obtained by the examination of 10,060 school children.

TABLE OF COHN,

Showing percentage of myopia at different school periods, and the degreee of myopia at the corresponding time.

	Percentage of myopia.	Average degree of myopia.
Village schools	1.4 per cent.	$\frac{1}{24}$.4
Elementary schools	6.7 "	$\frac{1}{25}$.7
Grammar schools	10.3 "	$\frac{1}{21}$.9
High school	19.7 "	$\frac{1}{19}$.6
College	26 2 "	$\frac{1}{18}$.7
University	59 "	$\frac{1}{12}$.

The picture of the progressive nature of myopia which the above figures present us with is sad, and should be a lesson to thoughtful parents, guardians and teachers who wish to develop intellectual prodigies too early in life.

Having seen the statistics which demonstrate the evil influences of over-education at too early a period of life, how shall we avoid their consequences? Shall we relapse into a state of semi barbarism for the purpose of avoiding the evil consequences of myopia? I think not. Civilization is advancing in the world, and those who do not keep pace with it are certainly lost. It is the place of the public to recognize science, to give the scientific man a chance to do as much good as is possible, and not ignore the present and future welfare of our race in the wild scamper for wealth. Some time could be spent to advantage by every intelligent individual in reading how his five senses are retained and how they are lost. The scholar of to-day who investigates the darkest fields of research without ever stopping to inform himself even in a popular way regarding the very faculties which make him a successful scholar, certainly cannot be considered broad in his views. We should at least attempt in this age of general educational attainment to render the damage done the eyes in obtaining an education as small as possible.

General rules regarding the light in our schools.

The researches of Cohn in the year 1865 bring out the following astounding facts: In twenty elementary schools examined by him where the ages of the scholars and the nature of the instruction were practically the same, the nature of the light differed widely. The average degree of the myopia differed from 1.8 per cent. to 15 per

cent. in direct proportion to the perfect or imperfect illumination of the school houses. The new schools in broad streets had from 1.8 per cent. to 6.6 per cent. of myopic children, while the schools in the narrow streets of older portions of the city had from 7.7 per cent. to 15.1 per cent of myopic children.

Florschütz found in 1887 21 per cent. of the children in the *Coburg* schools myopic. After the building of new school houses he found the percentage of myopia in children of the same age reduced 15 per cent.

From the above fact it is clearly seen that attention to the construction of our school-houses is very important. The length of the school-room should run *north, northeast or northwest,* the teachers desk being at the southern extremity of the building. Probably the best position for the windows would be southeast and northeast. Direct north and south light is to be avoided, if possible, in the average temperate climate. The climate of certain places may make it desirable to give the school-house a different position.

In foggy countries, direct north and south light may be desirable, while in places near large mountain ranges the position of the school-house may be best situated to meet local conditions. The position of neighboring buildings must be considered unless the light is taken through the roof. There should be no seat in the school-room from which the sky cannot be seen. Great care must be taken to regulate the light when it enters from two sides of a building; otherwise the pen and pencil cast a shadow on the work being done, in one-half of the room. After extensive discussion it has been decided that there should be at least one square foot of window surface for every five square feet of floor surface.

The fact that we can reduce the myopia 15 per cent. by the construction of properly lighted school-houses, leaves us to conclude that there are many other means at our disposal, which if intelligently understood and made use of in the proper way, at the proper period of life, would do much to check this onward march of myopia, which has followed the attempts made to raise the general standard of education of the race.

Without facts or statistics before us, let us picture by what additional means we may check the increase of myopia:

First—The eye stretches in proportion as it is soft and this softness is certainly controlled by hereditary influences. This could be in some degree avoided by myopic parents discouraging early in life the marriage of their children into other families known to be myopic.

Second—The eye is softer the younger the child. Myopic parents should delay all unnecessary study to as late a date as possible.

Third—The eyes stretch in proportion to the nearness and fineness of the work. The playthings used in infancy should be large. The first letters used should be large, and all print for the books of very young children should be as large as possible. German text is bad, much worse than Latin text. [Germans dispute this.]

Fourth—In early school life a working distance of fourteen inches should be insisted on by a mechanical device, if necessary, as a head holder.

If the myopia prevents distinct vision at this distance—lenses should be given which will enable them to maintain a working distance of fourteen inches. It is probably best in children to correct the myopia completely when it is not greater than $\frac{1}{10}$. and in many cases even higher, the child under these circumstances, not only gains a good working distance, but with time developes a normal range of accommodations which is usually wanting in mypoic persons who have not worn glasses during their youth.

The effect that bad illumination has on myopic eyes has already been considered, and estimated at 15 per cent. It is more than probable that by intelligently directed attention to the other features causing the developement of myopic, it would be reduced at least 60 per cent. from its present state of prevalence. The following table also speaks plainly regarding the prevalence of myopia in Germany.

The study hours b tween the ages of 10 and 19, are in England, France and Germany as follows:

Study hours in	England, 16,500.	Exercise hours,	4,500
" "	France, 19,000.	" "	1,300
" "	Germany, 20,000.	" "	650

It is thought by the Germans that it is the excess of work done by their children which alone accounts for the prevalence of myopia. They do not believe that their peculiar text is in any way to blame. It is evident that the excessive work is the most prominent factor, but it does seem that the task performed with Latin text is not so trying as it is with German text.

Another bad fault found in the examination of school children, is the faulty glasses they wear when selected without the advise of a specialist. Cohn found of all children wearing glasses 37 per cent. were wearing glasses which were too strong. In such cases any co-existing astigmatism will be found to have been entirely neglected.

Most of the European nations have now a systematic school inspection, under the charge of a thorough specialist. The object of which is in the main to reduce the damage done by progressive myopia. Having considered the nature and etiology of myopia, somewhat at length, we will take up its classical consideration in our next.

The class in Optics for March formed on the 24th. Its members were: Melluish, Ottawa, Kas.; Bannister, Halifax, N. S.; Buckingham, Newark, N. J.; Lindsey, Houtsdale, Pa.; Fairchild, Johnstown, N. Y.; Little, Carlisle, Pa.

A class will form about April 24th, for the accommodation of those who are at liberty during April.

[The communication signed X. Y. Z., with the answers by Dr. Bucklin, published in March issue, by some means was inserted without the printer's proof being read, and thus several typographical errors were passed without correction.—Ed.]

Watchmen's Tell-Tale Clock.

DR. J. MILLAR, of London, recently exhibited a practical tell-tale clock invented by him. It is an ordinary clock of strong construction, and has neither dials nor hands. The so-called dial consists of a brass ring in which is fastened by a simple arrangement a sheet of stiff paper, the whole of which revolves once in twelve hours. The movement is fastened into the case in such a manner that the dial can move freely. In the door of the case, which is over the dial paper, is bored a hole, furnished with a tube just large enough to admit a pencil. The watchman when passing the station, pushes his pencil as far into the tube as he can, and presses lightly, whereby a mark is made upon the paper dial, printed with the hours, thereby indicating the exact time when he was there. In the morning when the clock is wound, the paper contains a record of the visits made to the station by the watchman. Three differently colored pencils are used so as to avoid the changing of the dial every morning. On account of the simplicity, cheapness and certainty of the clock, it has already been introduced into many factories and mills.

Gold Size.—1. (Oil size.) Drying or boiled oil thickened with yellow ochre or calcined red ochre, and carefully reduced to the utmost smoothness by grinding. It is thinned with oil of turpentine. Improves by age. Used for oil gilding. 2. (Water size.) Parchment or isinglass size mixed with finely ground yellow ochre. Used in burnished or distemper gilding.

Problems in the Detached Lever Escapement.

BY DETENT.



HERE IS ONE factor in position adjustment of watches provided with the detached lever escapement which is usually too much ignored. This relates to the poise of the lever fork and pallet. It seems to be thought by most adjusters as unimportant to look to this part of the movement, and if the balance is only in poise or thrown out of poise to aid in position adjustments they think that everything is done which is required. There are many adjusters, and those are among the best who always see that the fork and pallets are properly poised before attempting to adjust the balance. There is one more point I will glance at before I resume the argument of the one proposed to be discussed in this article, and that is in regard to movable or adjustable bankings. These adjuncts are very convenient for setting the escapement and developing a proper action of the parts, and if they could be but firmly fixed as soon as the relative positions were established they would be all right, but to change the position of the bankings interferes with the adjustments. I am led to speak of these points in order to prepare the reader in a sense for the points or details to be looked to when putting a watch movement through the process of adjustment.

In my article in January I promised to continue a consideration of the resources an adjuster has for isochronizing a balance spring. In speaking of these things it is difficult to give specific rules, as each rule has exceptions, and sometimes the exceptions are to be applied nearly as often as the rule itself. I will give an instance: A method at one time frequently resorted to by English adjusters in the cheaper grades of watches and one that accomplished the purpose very satisfactorily, consisted in bringing the watch to time with the regulator in the middle of its arc; the isochronism was obtained by opening and closing the curb pins. The reader will see if he gives the matter proper thought that if the curb pins are wide apart they do not control the short vibrations but very little, as in that case the spring is free entirely to the stud for the greater part of the time. To illustrate, let us suppose we have a movement in which the balance has to perform an arc of 45° before the balance spring touches the curb pins in either direction. Here we have an arc of 90° (by counting the arc in each direction) over which the curb pins offer no control, and it is evident at a glance that these vibrations must be performed relatively slower. To continue the illustration, suppose the curb pins to be opened and closed (within reasonable limits) until it is found that the long and short vibrations are alike; that is, isochronized; if, now, the watch is brought to time by the time screws a very fair adjustment for isochronism is quickly and easily obtained.

Many adjusters object to the above method, but the writer contends it is much more legitimate than throwing a balance out of poise by the quarter screws to obtain certain results in position adjustment.

The conditions supposed in the illustration given above for obtaining isochronism by manipulating the curb pins were that the long vibrations were to be quickened. We will change the conditions and suppose the long vibrations are already too quick. In this instance if the balance spring is a flat one with the *points de attach* pinned in on a straight line, take up the balance spring a little and bring the watch to time by the time screws, or by placing thin washers under the screw heads; or if the screws in the balance rim are of gold replace them with brass screws of the same weight. Here we retard the long vibrations by atmospheric resistance. It is very seldom a flat balance spring will be found to gain in the long vibrations except it contains a great number of coils, probably far too many to hope to obtain good position results. In such cases, that is, when it is found necessary to slow the long vibrations, and we have a very long close-coiled spring, the better way is to throw away the old balance spring and replace it by a spring with more open coils. These coils must not be too wide, but wide enough to effect our purpose.

I presume most of my readers understand what is meant by an open or close-coiled spring, but as some may not know I would say that balance springs are made by winding two, three or four springs together on an arbor, one overlapping the other. To illustrate the process of manufacturing tempered springs on a larger scale, suppose an ordinary mainspring barrel was taken and a slot cut through the side of the barrel so that we could hook the inner end of the spring to the hook of the winding arbor; of course, if the arbor was now wound it would draw the mainspring into the barrel and wrap it around the arbor. If there should be two slots cut in the barrel and two hooks placed on the arbor, two springs could be drawn in at once, one overlapping the other. Three slots and three hooks could also be employed, so as to wind in three springs at once. Now, this is precisely the mode by which springs are made in our watch factories. Little copper boxes, the internal diameter of which is equal to the diameter of the coils, are provided, and two or three coils of hair-spring wire are drawn in, one over the other, until the box is full. These copper boxes are dipped in a crucible of melted cyanide of potassium or rock salt at red heat and then withdrawn, and while still red hot and coated with the fused cyanide, which acts as a flux and prevents the springs from oxidizing, they are plunged into cold water. They are then washed and dried and blued, which also tempers them. The reader will see that if two springs are coiled together, the space between each coil will be the same as the thickness of the spring, and if three springs are coiled together the space between the coils will be double the thickness of the spring. Consequently balance springs are known as two, three and four coiled springs.

Now, for the purpose named above, if we throw out a close or two-coiled spring, we should substitute a three-coil, or one a little more open in the coils, which would give us a spring that would afford long vibrations which were relatively slower. Frequently if we have a spring with which it is difficult to quicken the long vibrations enough by any of the methods cited, it can be accomplished by removing the entire outer coil, and opening the remaining coils so as to produce a volute or gradual taper of the space between the coils toward the center, which will do it. Usually, however, a spring of the proper diameter, containing from 12 to 15 coils, will isochronize if pinned in with the *points de attach* in the position described (in a straight line) by shifting the point where it is pinned into the stud; that is, let out the spring a little to quicken the long vibrations and take it up a little to slow the long vibrations. In adjusting, the process is precisely as in every other mechanical pursuit; it is necessary to understand certain general principles, and then reason out the results and modify them to correspond to the task we have in hand.

One fault in connection with adjusting is, we are too apt to overlook seeming trifles. Let us consider that an ordinary watch beating one-fifth seconds makes 432,000 vibrations in 24 hours, and if we only modify one of these in an almost unappreciable degree we get an aggregate result which would astonish us if we did not fully consider the matter. Let the reader for example imagine the fork thrown out of poise only one-tenth of a grain, and this excess of weight so disposed that the balance had to lift it at a certain relative position to accomplish a vibration; now, the claim by some adjusters that there is as much force given back on the return vibration is not

tenable, strictly speaking, because of the inertia of the parts. The balance is moving at its greatest velocity when it affects the fork action, and although gravitation is an instantaneous force it requires a certain definite time to act on matter. How the poise of the fork affects position rates will be the next theme for us to consider.

Watch with Movable Hour Figures.

THE details and illustrations, says the *Uhrmacher Zeitung*, of the following highly ingenious watch, of the last century, has been furnished by a subscriber living in Verona, Italy. This watch reminds one in its manner of indicating time, of a specimen in the Marfels Watch Collection, published in the columns of THE JEWELERS' CIRCULAR. The motion work of the present specimen, however, is entirely different, and its get up has been well studied, although it is somewhat more complicated than the one in the Marfels Collection.

Fig. 1 gives an external view, from the dial plate side, while fig. 2 shows the mechanism of the motion work underneath. The dial has a semi-circular cut-out; the upper plate is of gold, the lower enameled white; this carries the minute division. The lower part of the covering dial is handsomely chased. The hour figures move on the minute dial. The time is indicated in the following manner: The blued steel hour-figures issue from the left side into the cut-out, and move on the minute dial at due pace, so that each of them passes precisely in one hour through the arc of 60 minutes; it then disappears again to the right of the cover. Every figure is furnished with a point which indicates the minutes. In fig. 1, the hand points to 4:2, and it is plain that in the progress of the two figures, that of 3 will in a short time disappear under the edge of the covering dial



FIG. 1.

When one moves the hands of this watch, thereby seeing the figures follow each other in the greatest regularity, one is tempted to ask, where do all the twelve come from? Each stands one-third part of a circle away from its fellow, and therefore only three of them can stand around a common center of revolution. It is easy to imagine, for instance, in fig. 1, that underneath the covering plate, and in about the region of the point of the foot of the horn-blowing boy, figure 5 must stand, which in its turn will arrive at 0 minute when figure 4 will have arrived at 60; but again, one should think, figure 3 would succeed again, and it is not easily understood, in what manner figure 6 will make its appearance. This apparently enigmatical progress is at once explained by removing the dial plate and seeing the motion-work mechanism shown in fig 2. On account of greater lucidity, all the parts not belonging to the motion work, including the repeating work, have been left out in the cut.

The first thing that strikes the examiner, are the twelve hour figures, of which each four are arranged into a cross. These three figure crosses are each by means of a pin, around which they revolve, fastened upon a large disc *R*, which in this watch acts as an hour wheel, and it is therefore crossed out like a wheel so as to reduce its weight as much as possible. The disc *R*, now is revolved in the following manner: The canon pinion furnished with a square for setting the hands, has twelve teeth, which depth into a minute wheel *w* with thirty-six teeth, so that, therefore, the minute wheel makes one revolution in three hours. In place of the pinion, a somewhat smaller wheel with thirty teeth sits upon the minute wheel *w*, and this depths into an equally large wheel with thirty teeth, under the disc *R*. The disc *R* with the figure crosses therefore makes one revolution every three hours, or a revolution of 120° of the minute division upon the dial. Underneath each of the three figure crosses, covered by the disc in the center, (and therefore not visible in the cut), a small, eight-toothed star, into which each one of the elastic jumpers *a*, *a'*, *a,"* depths and thereby establishes the figure cross in its correct position. The figures upon the several figure crosses are arranged thus, that they alternate from 3 to 3, therefore 1, 4, 7, 10 etc. It is easily seen now, that it is simply necessary to impart a corresponding turning to each of the figure crosses before it passes into action, so that the correct figure issues at the cut-out. This turning of the figure crosses is effected in the simplest manner possible. In fig. 2, the position of the motion work is such that the figure 2 is under the dial, therefore invisible, figure 3 is about to leave the minute dial in the cut-out of the covering plate, and figure 4 has just now entered upon its course. Before, now, the next following hour figure arrives upon the dial *Z*, in the cut-out, the figure cross must receive a turning, by which the figure 5 is turned outward, that is, at the circumference of the disc. This turning is effected by a pillar *b* upon the movement plate, which is placed in such a manner that the arm of the several figure crosses, standing outside,—in this case, therefore, the arm with the figure 2— abuts against the pillar, so that in the gradual progress of the disc *R*, the corresponding figure cross turns itself around, as it were, by two star-wheel teeth, whereby the correct figure—in this case, therefore, figure 5 is always turned out. A very weak spring *c* lays itself with its free end against the circumference of the disc *R*, and thereby prevents that incorrect time indicated, due to the tooth shake in the motion work. The apparently complicated motion work mechanism of this "old timer," which by the way, is admired everywhere, will after this explanation become very simple, but nevertheless highly ingenious.

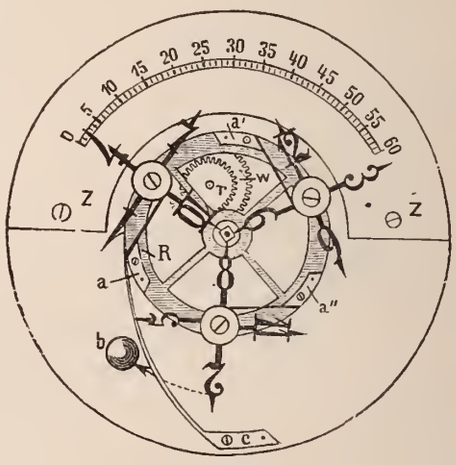


FIG. 2.

THE SOURCES OF PLATINUM.—The most important sources of platinum are the hydraulic mine at Nizhne-Taglsk and Forgo-Blagsdal, in the Ural Mountains. About eighty per cent. of the world's production comes from these sources. Next in importance are the gold wastings of the Pinto, in the United States of Columbia, yielding about fifteen per cent. of the entire production. It is also found in Brazil, Borneo, Hayti, Peru, India, Australia, and in the sands of the Chaudiere river in Quebec. It has recently been found in a quartz vein in New Zealand.

Gilding Over Color.

AS A large portion of the general public think that the jeweler is versed in everything connected with the use of gold and gilding, no matter to what object they may be applied, the following few points on gilding over color on books may prove of some value.

During olden times it was customary to gild over other than red colored edges, and very pretty effects were obtained. A bright green under the gold, for instance, was thought to be very beautiful; the gold, while it toned the color, did not hide it altogether, but its own richness and brilliancy became more dazzling and through the verdant tints which faintly flashed or glimmered through it. Another form of ornamenting edges was by working flowers or designs by means of two different shades of leaf, a deep one and a light one. The light gold being placed on the edges in manner described, a coat of size was rapidly and gently passed over it. This second coat of size when dry was rubbed over with palm oil, and the deep colored leaf used for the flower or design was laid on with chosen pallets or ornamented tools, which were first warmed at the finishing stove. This was called "gilding à la antique."

Sometimes volumes were gilded after their edges had been previously marbled. In such cases the edges were not overcharged with color. After pressing and burnishing the size was laid on evenly and lightly, so as not to disturb the colors or design of the marble pattern, and then the gold was instantly put down and finished off in the usual manner. The marble showed through the gold and looked superbly beautitul.

A Good Silver Plating Solution.

A PERSON may obtain a good silver plating solution by dissolving one ounce of cyanide of silver in 1½ ounces of cyanide of potassium, which has previously been dissolved in as little water as possible, then diluting the whole with distilled water to make one quart of solution. This should be placed in a glass vessel—a quart battery jar will answer. Use a strip of sheet silver, one or two ounces in weight, for an anode, attaching the same by a silver wire. Suspend the cleansed article from copper wire. Two rods of clean brass or copper laid across the top of the jar will serve for making the attachment and the battery connections. This bath will only serve for silvering small articles. For a bath for large articles use cyanide of potassium, 6 ounces; silver (in cyanide), 4 ounces; water, 1 gallon.

Silver platers use sometimes nitrate of mercury, which they call quickening solution. Articles of copper, brass or German silver, after having been properly cleansed, are sometimes plunged for a moment into this solution before being placed in the silvering bath for the purpose of obtaining on the surface a thin amalgam of mercury on which the silver deposits more readily than on the clear surface. The nitrate should be dissolved in as little water as possible, with the addition of enough acid (nitric or sulphuric) to dissolve any precipitate of basic salt, and then strongly diluted with distilled water. The proportions are: Nitrate of mercury, 1 ounce; acid (nitric or sulphuric), 2 ounces; water, 1,000 ounces

To Prevent Metals Rusting.

MELT together a pound of lard and a lump of rosin, the size of an English walnut, using only heat enough to melt the rosin, which will take place soon if it is broken fine. By wrapping the rosin in a piece of stout brown paper and striking it gently with a hammer, smooth stone or other hard substance, the rosin may be readily broken, and by carefully opening the paper, may be added to the lard with ease. When the rosin is completely melted stir the mixture well and set aside to cool, and, as it begins to harden, stir occasionally. When cool keep it covered to exclude the dust. Any article of steel, even delicate machinery, covered with this—moving the article slightly to cause the composition to enter all crevices—no matter how thin the coating, will be completely protected, and the mixture prove itself a complete anti-rust.

The following is also said to be a good application to prevent metals rusting: Melt one ounce of rosin in a gill of linseed oil, and while hot mix it with two quarts of kerosene oil. This can be kept ready to apply at any time with a brush or rag to any tools or implements required to lay by for a time, preventing any rust and saving much vexation when the tools are to be used again.

Useful Cement.

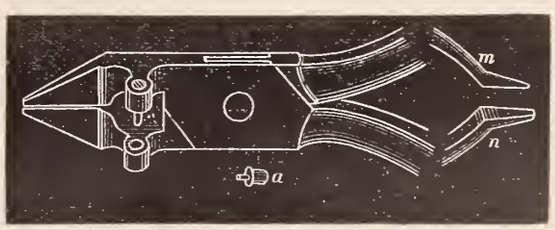
IT is a disagreeable occurrence, says W. S., in an exchange, when a watchmaker is busily engaged in turning a cemented-on piece with the graver, to have it jump off suddenly. The careful workman will, therefore, direct his principal attention toward preventing such an untoward occurrence, by using only very sharp gravers for turning, not letting them attack too deeply, and by using a good cement, which will keep securely upon the cement chuck, the article under the process of turning. The occurrence is most frequently due to the agent used for cementing—bad shellac or sealing wax which may have been good originally, but which has been ruined by repeated or unduly strong heating.

The same thing had formerly, also happened to me several times, and having profited by experience, I have been using for some time, a cement with so strong an adhesive property, that I have never since I first employed it, had a case of accident. The recipe for preparing it is as follows :

I take a little of the best yellow rosin, heat it in an iron spoon and stur into it very finely ground plaster of Paris, such as used by the stucco workers, until the mixture is about as thick as syrup. I then pour it upon a clean, cold stone plate, and let it get thoroughly cold. The mass adheres so tenaciously to the stone that it has to be loosened with a knife. The operator may satisfy himself at once whether the mixture is correct, as it must give a sharp metallic ring when bursted off with the knife. If it does not the cement is too soft, and must be heated again and have more gypsum added to it. Should it contain too much gypsum, it can only be chipped off in small flakes, and in this case, add more rosin. This cement is as useful for cementing chucks as it is for cementing things in general, and is employed in the same manner as shellac. After loosening the article, it is not to be cleaned in alcohol, but rinsed in benzine, when it will appear as nice and clean as before the time of cementing.

A Useful Pliers.

A RECENT number of the London *Horological Journal* contained the cut and description of pliers useful for pressing joint pins out of watch cases or jewelry. The pliers have on one side a projection on each jaw; one with a hole, the other with a small pin in it. A full set of assorted thicknesses of these pins belongs to each



pliers. The joint piece is set upon the lower part with the opening, the pliers are opened and the pin is pressed down. The tool also serves as nippers for cutting thin wire. The ends of the pliers are not shaped like those of the ordinary kind, the end *n* being formed like a corkscrew, while *m* is more tapering, in order to press in and smoothe joint pins.



Diamond Thieves.—Astute diamond thieves have been reviving an old trick in South Africa, and nearly succeeded. They went out as representatives of a firm dealing in improved safes, and took some of the latter with them, as samples as they stated. Of course they all had the necessary duplicate keys, etc. They sold one of the safes to a large company, which on several occasions, had it nearly full of gems. The dealers, no doubt, watched carefully, but they missed the main chance. They managed to get across to it, and walked off with the contents, which happened to be worth only about $300. They have, of course, sought a new field of operation. Some years ago, a similar trick was played, and a well-known diamond company nearly ruined, as they had been keeping back its gems for a rise in the market. To the present time nothing has been heard of the manipulators who hurriedly left the scenes of their depredations.

Handsome Clock.—One of the most beautiful and costly clocks ever made was sent many years ago by the East India Company as a gift to the Emperor of China. The case was made in the form of a chariot, in which was seated the figure of a woman, with her right hand resting on the top of a tiny clock, which was placed in the side of the carriage. Some of the wheels that moved the clock were concealed in the body of a bird that had seemingly alighted upon the lady's finger. Over her head was an umbrella that concealed a silver bell. This, although it seemed to have no connection with the timepiece, struck the hours, and it could be made to repeat by touching a diamond button fixed below the dial of the clock. At the feet of of the lady's figure was a golden dog, and in front of her were two birds that were apparently flying before the chariot. This exquisite clock, with all its necessary parts, was made of gold, and was most elaborately ornamented with precious stones.

Death of an Illustrious Man.—The Circular is called upon to announce—and does it with profound regret—the death of the illustrious Ed. Phillips, so well known to every watchmaker from his researches on the terminal curves of the balance spring. He was president of the Chronometrical Congress in Paris last year, the minutes of which have recently been published in the European horological press. It may well be said of him that up to the very last days of his life, his efforts were directed toward the perfection of the timepiece.

Syndicate.—A meeting of some sixty watch manufacturers of the Cantons, Berne and Soleure, Switzerland, was held some time ago at Bienne, and statutes were adopted unanimously; they are of the regulation kind—on the old pattern—every watch manufacturer is to adhere to a scale of prices, and to do his level best toward the improvement of the state of trade, which well-meant resolutions are faithfully adhered to until an opportunity offers to make a little money by doing otherwise, and then, good-bye resolutions and intentions.

Exposition of Electrical Apparatus.—An Exposition of electrical apparatus, etc., will be held at Edinborough in May, 1890, and will probably last six months. It is to be divided into two classes.—One to embrace everything pertaining to the subject of electricity in all its branches and applications; the second class to be devoted to the different industries and inventions. Seymour Wade, 35 Boulevard des Capucines, Paris, has been appointed commissioner for Europe.

The Antiquity of Gold Ornaments.—The British Museum affords evidence that the ancient Britons made lavish use of gold for personal ornaments. The chiefs who ruled in England before Cæsar conquered the country, did not limit themselves to the use of iron and bronze for their armor. They sometimes wore armors of solid gold; of this we have proof, for in the museum is a golden corslet of ancient British workmanship, excavated at Mold, in Flintshire, Wales. It weighs seventeen ounces, and is three-sevenths of an inch long and eight inches broad. This interesting relic, with which a ghost story is connected, was discovered in 1833.

Gold Mines.—The production of the gold mines of Witwatersrand, South Africa, is constantly increasing, as will be seen by the following tables:

	1888, ounces.	1889, ounces.
January	11,269	24,986
February	12,161	25,800
March	14,709	28,075
April	15,853	27,136
May	19,002	36,298
June	16 328	31,272
July	19,963	32,407
August	19,877	32,142
September	20.129	34.369
October	27,773	32,035
November	27,336	36,116
December	26,148	40,404
Total	230,548	381,040

Longevity.—A recent telegraphic dispatch from Hamburg announced that the watchmaker, Göring, living at Ottensex, near Hamburg, will, in a few days, celebrate his 106th birthday. Until recently, the old man was still able to mount balance springs in ladies' watches.

Horological Centers.—The great modern centers of watchmaking are Coventry and Prescot, England; Locle and Chaux de Fonds, near Geneva, Switzerland, and Elgin and Waltham, America. The superiority of the Swiss watches made by hand arises from the fact that in Switzerland whole families are taught and pursue the trade for generations, and thus acquire phenomenal skill and nicety in their work. Their apprentices are also required to serve ten years before they can be called master workmen.

A Horological Marvel.—An ingenious prisoner, at Karius, Bohemia, recently constructed a watch, three inches in diameter, with no other tools or materials except two needles, a spool of thread, a newspaper and some rye straw. The wheels, staffs and pinions are all made of the rye straw, which, it is well known, is quite coarse and tough. It runs six hours without winding, and keeps good time. It is now in possession of the Prefect of Karius, who considers it the greatest marvel of the nineteenth century.

Glass Beads in Bohemia.—The centre of this industry is at Gablonz, and its mock jewelry is sent all over the world, penetrating the recesses of even the Dark Continent. Paris is one of the greatest marts for these goods, but the trade depends greatly on fashion. A crisis, for instance, occurred in September last, with the result that prices fell enormously, cut beads, which sold previously at 12 florins, being then bought at 4½ florins. Over-production and lack of demand was the cause of the crisis. The Bohemium "Trempelzeug" pressed beads have been now nearly replaced by French porcelain beads with large holes. The Bohemian moulded beads, again, which are known in the trade as "doppel-schmelz," have to contend seriously now with the Italian "macca" beads. The Bohemian trade in beads suffers from the fact that buyers as well as sellers are never really certain how many beads there will be in a bunch. According to usage there should be 1,200 beads in a bunch, but, owing to competition, reductions have been made, and it is said that often a bunch contains 850 instead of 1,200. Enormous indemnities have to be paid in consequence. An attempt made to permanently fix the number at 1,200 unfortunately failed.

Letter Engraving.

ITS POPULARITY AT PRESENT.—ENGRAVING MACHINES.

By George F. Whelpley.

(written for the circular)



THERE APPEARS to be a growing demand for knowledge in the art of letter engraving, not alone from those who once pursued the business as a profession or exclusive avocation, but recently a tendency has been manifested among jewelers to acquire enough knowledge of the art to do their own engraving—that is, such of it as requires but ordinary skill, and does not call for the expert hand of the professional. Formerly the jeweler deemed his legitimate business of attending to the selection, display and sale of his goods all that he could reasonably attend to; but of late years, with a growing demand for engraving which has been developed among the purchasing public, jewelers have more and more perceived the advantages of being able to perform the simpler kinds of engraving for themselves. Customers frequently buy articles of no great intrinsic value which they wish to have marked with initials, a monogram or inscription. It is necessary to have this marking done promptly and with as little expense as possible, because the limited value of the purchase precludes a large outlay for engraving which would reduce the profit on the sale. In such a case, if the article has to be sent to a professional engraver the cost must be something materlal, even at the moderate charges which now obtain, and the work has to take its chances as to time, depending ordinarily upon the amount of orders ahead. Both these inconveniences can be obviated if the jeweler or his assistant can attend to the job himself; and this fact is becoming more apparent every day to the parties concerned

But there is another fact in this connection which cannot be ignored, and which bids fair to become of greater consequence than professionals have been inclined to accord it—that is, that there is a stronger movement and more general favor towards labor-saving apparatus in engraving than has been previously manifested. People have been skeptical as to the feasibility of engraving by machinery, but of late years the most incredulous have been convinced that engraving mechanism has been making rapid strides towards general adoption. Inventions and improvements have followed each other in rapid succession, till at present we have about half a dozen engraving instruments in use in various stages of perfection, some of which perform work so creditably that they are calculated to supersede the slow manual process in a great number of instances.

The very fact that so many machines have been invented and improved upon tends to demonstrate that there must be a growing demand for aids of this kind, for inventors do not waste their time and money on devices which they could not place on the market with a prospect of realizing a fair return on their investment. There is no question that engraving machines are destined to perform a large share of the work that is now done by hand, nor is there a doubt in the minds of those acquainted with the subject that ere many years elapse very few jewelers' establishments in the country will be without an engraving instrument capable of performing great variety of work in a short period of time.

I am led to these conclusions from the following facts: Jewelers show a growing desire to be able to do their own engraving. From all sections we have evidences of this tendency. Most of them, however, con ill afford the time necessary to learn the art so as to engrave tolerably well. There is a good deal of study and practice necessary before average efficiency is attained in the business, and the amount of desultory work he performs when capable will hardly suffice to maintain his hand in good form except he keeps up a fair degree of miscellaneous exercise outside his actual needs. If he had a machine which he could manipulate without wasting valuable time in learning how to handle it, and which would be ready to execute in a few mtnutes what it would take hours to do by hand, it requires no great argument to prove that he would prefer the instrument to his own handicraft, and it would also be far cheaper and more convenient than sending the work to an engraver, with a consequent outlay of time and money.

The only question remaining unsolved in connection with the introduction of engraving machines is, in my opinlon, how much they can be brought to perform. How closely is it possible to bring their work to imitate hand engraving? What kinds of work are they best adapted to? These are considerations which occupy the attention of inventors, and will continue to do so until machines are perfected as far as human ingenuity can do it. From present appearances a very high degree of efficiency may be expected from machines within a brief period. Already much has been accomplished, leaving great promise of future triumphs.

I have not the space here, nor is it my purpose to discuss the merits of the various engraving instruments already on the market, but merely to give a cursory enumeration of those submitted to my examination by agents or inventors. The demand for these machines is unquestionably growing, and the supply promises to keep up with it. Much of the effort of inventors, in my opinion, should be directed to the perfection of those already invented rather than to producing new instruments. Those produced embrace nearly every possible motive agency, but though some of them perform very excellent work, none is so perfect or practical as it is capable of being rendered by judicious improvement.

The most elaborate of the engraving instruments is the Power electro engraving machine, which, as its name indicates, is impelled by electricity. It is also among the best for general engraving, but it requires some skill in its manipulation and is the most complicated of this class of instrument. For these reasons it is not so well adapted to persons whose time is limited and whose business involves but little engraving.

The "Success" is a very fair instrument in its way and uses a graver, as in manual art. This feature is a very desirable one in an engraving machine, and every substitute for it is to be regarded with suspicion. It operates on the principle of the pantagraph, reproducing *fac simile* copies of the pattern set in position in sections like stencil letters, and the scale may be larger or smaller than the original. While not all that could be wished, the "Success" has many good points to recommend it.

The Francis machine is another of the more ambitious kinds of automatic engravers, but I am unable to endorse its claims to patronage owing to the scant time afforded me for testing its powers. It appears to have had quite a run and is still in the market, but I am unable to say what relative degree of favor it enjoys.

The Engel and the Spencer are two other engraving machines, differing radically in their modes of operation, but neither has achieved any marked extent of patronage. The former is the best known and is still on the market, while the latter is practically extinct. I have been unable, after diligent inquiry to find a specimen in use. It was invented about twenty years ago.

The latest and among the best of engraving instruments is the air motor machine, only about a year developed into working order. It is the simplest and cheapest one ever devised, and though it has serious drawbacks, one great merit is that it is capable of being utilized for other purposes besides engraving, owing to the peculiarity of its construction. As it was described and illustrated in this

journal, issue of May, 1889, further description in this place wonld be superfluous. The inventor, however, continues to improve it, and how perfect it may ultimately become is yet only a matter of conjecture. I have tested it and inspected various specimens of its work done by the inventor, all of which were very satisfactory.

There is still another machine in process of development which is not yet finished, but for which I understand an application for a patent is pending. I am, of course, debarred from explaining its construction at this stage, but from what I can learn it combines the best features of its predecessors while avoiding their defects.

While steadfastly maintaining the superiority of hand engraving, executed by a competent artist, over the best performances of these automatic machines, reiterate that they are capable of being utilized for ordinary engraving purposes to a wonderful extent. They are certain to come into much more general use than hitherto, and their improvement is likely to keep pace with their more general adoption.

New Method of Manufaturing Compensated Balances.

THE BALANCE is without doubt one of the most important parts of the watch, and the compensated balance especially is worthy of all the care and study which the watchmaker can bestow on it, because, if it were not to perform correctly, he might just as well hang his trade "on the willow tree and be off to the wars again." He must by all means endeavor to make it conform to and compensate all the influence of temperature if he desires to acquire the fame of a skillful workman. Almost the whole of his skill lies centered in manipulating the balance with its spring—which is the study of a life time. The simple knack of cleaning and repairing watches is routine business.

This is the theoretical stand-point, and the practical must conform to it. Indeed this fact is so well recognized that every inventor adheres to it, when seeking to raise the capacity for the compensating of the balance to an ever higher grade. Essential progress has been made recently in this direction; the invention of anti-magnetic alloys and their adoption for compensated balances especially may be called a long stride forward.

The customary method of manufacturing such balances however, is difficult, tedious and fairly costly. To counteract these objections Paul Perret, of Chaux-de-Fonds, has invented a much simpler method, by which the construction of the anti-magnetic balance is much cheaper. It deviates widely from the hitherto observed rule of constructing the rim and arms of one piece—it being the opinion that a truly compensated balance could not be made in any way. He makes the rim and the arms separate and then screws the former to the latter.

Mr. Perret explains his method as follows: "I first make an anti-magnetic alloy of platinum and nickel or of iridium and nickel, adding also a little silver if I desire to impart an attractive color to the alloy. This mixture is melted together in the crucible, and possesses all the characteristics of steel, as well as approximately the same co-efficient of expansion. The metal is then poured into rectangular bars, and rolled out to about the thickness which the inner balance rim is to have. Upon this plate is next hard-soldered an equally large plate of some other metal, possessing a larger coefficient of expansion, for instances, brass; the latter plate, however, must be somewhat thicker than what the outer rim of the balance is to be. This bi-metallic plate is next, with the brass outward, rolled together in the shape of a tube, of the size of the balances which are to be made from it, and hard-soldered together at the two sides. From the thus-obtained bi-metallic tube rings are cut, corresponding in height to the balance rims. When these rings have been equalized in the lathe and polished, the screwholes are drilled in for the several screws.

The arms are manufactured in a similiar manner, by stamping them from plates of anti-magnetic metal; they are then fraised and turned down, until they fit precisely into the rims. Two holes which must correspond exactly with the holes in the rim are then drilled into each of the arms. They are furnished with a screw, and the rims are then screwed to the arms. The rims are next cut open near the arms, for well-known purposes.

Fig. 1 shows a balance ready for mounting; the place of fastening

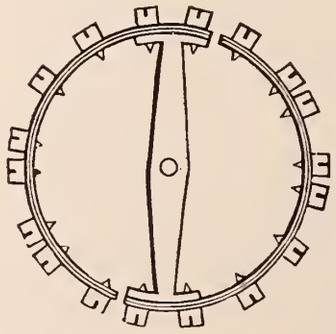


FIG. 1.

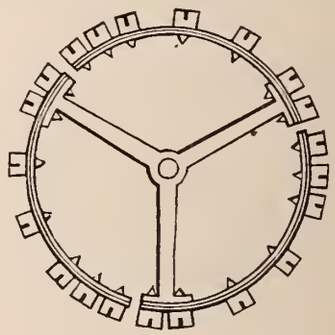


FIG. 2.

is plainly visible. Fig. 2 shows a balance of the same style of manufacture, except that it has three arms, which, according to the inventor's opinion, facilitates a still closer turning, because it is less subject to the influence of the certrifugal force, which, as is well-known, endeavors, in the vibration of the balance, to turn the elastic ends of the rim outward. Balances manufactured according to this method will very rarely, if ever, run untrue. The two parts of the balance being manufactured separately, there will not be so much dead waste of the costly material, which fact contributes toward cheapening the article.

Soap Bath for Cleaning Watches, Jewelry, etc.

THE *Union Horlogère* contains the following receipt for composing an excellent bath for cleaning watches, jewelry, etc.

Soap	92 grains.
Ammonia liquor	1,157 grains.
Water	1 quart.

Shave the soap and melt it in the water, then add the ammonia. We have seen in various publications, mention of a similar composition, but the proportions are not stated, and the result is that the watchmaker, after a few ineffectual trials, considers the recipe a humbug, and the journal not much better. There are still a goodly number of watchmakers, who prefer the good old way of cleaning a watch or a clock movement with soap and water and a good brush, and they will find the above given formula entirely to their satisfaction. Pour the bath into a receptacle containing the parts to be cleaned, but take care that they are entirely submerged, as without this precaution, the parts exposed to the air would soon be covered with an oxidation, which can be removed only with difficulty. The pieces, if well immersed, may for all that, be left in the bath for a whole day without any danger whatever; steel pieces are not whatever attacked, but, generally speaking, from five to six minutes are amply sufficient to clense them thoroughly. The bath may be used for a long time, and is thrown away only when it is too dirty or when it has lost its force. When not in use, keep it in a well-stoppered bottle.

Dry the articles in sawdust, to which add a little Spanish white. A slight brushing will then bring out its pristine polish.

If the odor of the ammonia is disagreeable, add a few drops of some aromatic essence—bergamot, mirbane or the like. This bath is largely preferable to the ordinary ways of cleaning with benzine, cyanide, alcohol and chalks, etc.

To reiterate: Keep the bottle with the bath well-corked, to avoid the evaporation of the ammonia, which, should it occur, would remove from the bath its principal cleaning virtue.

The Processes of Bronzing Brass.

THE term bronzing is applied to a variety of effects, such as a black bronze, brown bronze, green bronze, antique bronze, etc., each of which is produced by different applications of manipulations.

Black bronze on brass may be produced by applying a solution of platinum chloride or of ammonium sulphide, the platinum salt though the more expensive, producing the more brilliant and durable effects. For bronzing comparatively small articles, a dilute solution of the platinum salt should be used. The solution may be applied with a camel's hair brush, or the article may be plunged into it. Either alcohol or distilled water may be used as a solvent. If heated when dry the article will assume a steely lustre. When bronzing very large articles, such as fenders, etc., it is sometimes the practice to mix a little of the dilute platinum solution with plumbago made into a thin paste with water, and to brush this over the entire surface to be ornamented, which when dry is well brushed with a rather soft, long-haired brush until quite bright. The "high lights," or prominent points of the article are then gently rubbed with a piece of chamois leather moistened with alcohol, on which has been rubbed a piece of chalk, in order to remove the black stain from these points and show the underlying metal. As previously stated, a dilute solution of ammonium sulphide may be substituted for the platinum solution though with inferior results.

For a greenish bronze, Watts recommends a paste made of the following: Lead chromate, 2 ozs.; Prussian blue, 2 ozs.; plumbago, 8 ozs.; sienna powdered, 4 ozs.; carmine lake, 4 ozs. Water sufficient to make a paste; Solution of ammonium sulphide, or solution of platinum chloride, as desired. The mixture should be made up to the consistency of a thin paste, either ammonium sulphide or platinum coloride being used as the operator is more or less influenced by motives of economy.

When brushing off any of these bronzing powders the operator should be careful to avoid inhaling the dust.

According to the French method the article to be bronzed is dipped into a weak solution of sulphate of copper, dried, moistened with a weak solution of ammonium sulphide or of sulphurated potash, again dried and brushed over with jeweler's rouge and plumbago, the brush being slightly moistened with oil of turpentine. The article is then polished and finally given a coat of thin, colorless varnish.

Antique bronze is imitated by smearing the brass object with the following mixture: Diluted acetic acid, 100 parts; ammonium carbonate, 30 parts; sodium chloride, 10 parts; potassium bitartrate, 10 parts; cupric acetate, 10 parts; water, sufficient or 100 parts.

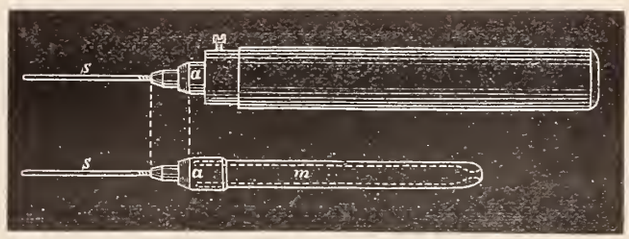
After smearing on this mixture, allow it to remain twenty-four hours. The brass will then be covered with verdigris. Brush with a soft brush, and tone any points desired with a paste of chrome yellow or jewelers' rouge. A little ammonia applied quite dilute gives a blue shade where desired. Finally, carefully brush off all the powders and then polish the surface with a brush which has been rubbed on beeswax.

To Finish Gold Work.

THERE are now made for the market gold articles containing so small a quantity of the metal, that they in the process of manufacture have to be supported underneath with iron wire. When the piece is finished, this iron is removed by dissolving it in some acid, for which it has great chemical affinity. Sulphuric acid is the best for this purpose; it is sold under the name of oil of vitriol. To dissolve the iron from the work, take a stoneware jar or pipkin large enough for the work in hand, put the work in it, and add sufficient boiling water to well cover the work; the pipkin must not be filled with water, for when the acid is added, it will boil over and carry all the liquid away, without it being properly utilized. When putting the acid in the water, great care should be taken to prevent its flying about, as the scald or burn will destroy everything with which it comes into contact. The proper way to add it to the boiling water would be as follows: Take an ordinary copper baling-out pan, and, first, put into that receptacle the oil of vitriol, and then take hold of the mouthpiece with a long pair of tongs, and very gradually pour the contents into the pipkin holding the work and the boiling water. When this is done, place the pipkin with its contents in a water bath or on a sand bath, but if these conveniences are not at hand, put it upon a sheet of iron with a gas-light underneath, which will keep the mixture at a regular temperature. After the expiration of one hour, the liquid must be poured off, and another addition of hot water and oil of vitriol, as before, made to the work. This should be kept in action a little longer, when a third one is made, which generally completes the process, if all these things have been favorable. The strength of solution which acts best is: to every 8 ounces of boiling water, take 1 ounce of oil of vitriol; that would be 5 ounces of oil of vitriol to the quart of boiling water. These proportions refer to when the solution is kept hot by means of a gas jet, and not when dissolution is allowed to proceed without its action being increased by the aid of applied heat. In the latter case, the dissolving mixture may wisely be used a little stronger. By this process, a large quantity of iron may be dissolved without affecting the gold in the least degree. Three hours, with proper attention given, is ample time for removing the iron from a batch of work containing it.

New Oil Cup.

A NEW oil cup of Swiss make has recently been introduced in the material stores of Continental Europe. The new oil cup consists of a piece of glass tube *m*; a metallic tube is cemented to the end *a*, the other end of the glass tube is melted only partly together, so that there still exists a small opening. A small steel tube *s* is



screwed into the metallic tube. This steel tube, which is used for the purpose of lubricating, is partially tapering and well rounded. A short "direction for use" accompanies each of these oil cups, and reads: "To fill the cup, the glass tube is drawn out of its wooden case; the steel point inserted in the oil, and the desired quantity absorbed into the former."

THE PASSION FOR JEWELRY.—As regards the general custom of wearing jewelry, it appears to be common to all mankind, in all ages, and in all conditions of civilization, and it is somewhat curious to find that about 800 B. C., false or cheap jewelry was worn in Cyprus as commonly as it is in the present day by a certain class of people. Several examples of bracelets, earrings and rings were found while excavating on that island, which are of bronze or copper, covered with a thin leaf of gold. With the passion possessed by these people to symbolize everything, all personal ornaments signified more than their outward appearance suggested. Finger rings indicated power, because they were usually signets; the earrings meant servitude; bracelets recalled bondage; while the necklace, reminding one of a wreath of flowers thrown about the neck, tended rather toward an honorable distinction. Among the necklaces discovered in the treasure chamber at Cierium, on the Island of Cyprus, is one which represents lotos flowers.



Cement.—A cement for meerschaum can be made of quicklime mixed to a thick paste with the white of an egg. This cement will also unite glass or china.

To Polish Nickel Plate.—To brighten and polish nickel plating and prevent rust, apply rouge with a little fresh lard or lard oil on a wash leather or a piece of buskin. Rub the bright parts, using as little of the rouge and oil as possible, and wipe off with a clean rag slightly oiled. Repeat the wiping every day, and the polishing as often as necessary.

To Solder Tortoise Shell.—Bring the edges of the pieces of shell to fit each other, observing to give the same inclination of grain to each ; then secure them in a piece of paper and place them between hot irons or pincers; apply pressure and let them cool. The heat must not be so great as to *burn* the shell, therefore try it first on a piece of white paper.

Good Advice.—We find in a horological exchange the following sound advice to persons learning the art of engraving : "There is no greater hindrance to progress, in learning to engrave, than in trying to cut with a badly set, or a half-sharp graver. Such a practice speedily engenders some of the worst evils—'constraint' and 'restraint' in the use of a graver, by which is meant the wrist becomes stiffened, the easy motion of the hand impaired, and the ability to hold a graver lightly materially crippled, and thus the power to cut strokes clean, true and free is measurably destroyed."

Stoning a Graver.—In stoning the belly of a graver, the blade should be held as lightly as possible between the thumb and second finger, the tool being barely touched by them, they being used simply as checks on either side of the tool to keep it in position. The only pressure that should be applied to the tool is that steady power supplied by the tip of the fore finger to its point, holding it down firmly upon the stone. Pressure applied to any other portion of a graver blade while stoning its belly only hinders the work in hand as to speed, and also diminishes the average certainty of securing for it a surface that shall be perfectly flat.

Observe Closely.—Close observation is necessary when taking down a watch for repairs. If it has a strong mainspring and a bad vibration, and the train is free, it may be assumed that the escapement is at fault. A very common fault by which the vibration is spoilt, is too much run on the pallets, and the escapement pitched too deep ; all run is a serious evil, and no more than sufficient for freedom should be allowed.

Fly-Cutters.—The usual form of fly-cutters is with a single cutting edge, used for cutting the teeth of brass wheels. Fly-cutters are often lately made double. A piece of steel fitted to the cutter holder, so as to project equally on each side, is turned to the form the cutter is to be. The steel is thinned on opposite sides, till the faces are just coincident with the center of the holder, and after being filed back from the edge, to give requisite clearance, is hardened and tempered.

Superiority of the Chronometer Escapement.—Between the going of a thoroughly well-made lever watch and a pocket chronometer, there is not a great difference until the oil begins to change, when the superiority of the chronometer escapement becomes manifest ; the lighter balance of the lever, and the greater number of the frictional parts place this escapement more at the mercy of that unguent. Besides this, the impulse in the chronometer escapement is delivered more favorably than that of the lever ; and it appears to be a further advantage that the balance of a chronometer is not so much meddled with by the escapement as that of a lever.

To Mend Celluloid.—Celluloid may be mended, it is said, by wetting the edges with glacial acetic acid and pressing them together for a short time.

To Bend a Glass Tube.—File the tube with finely-sifted sand, close both ends, and heat it over the flame of a Bunsen burner. It may in this manner be easily bent without losing its roundness at the elbow.

Frosting Watch Caps, Plates, Etc,—Two and one-half parts nitric acid, two muriatic acid, full strength. Dip the articles for a few seconds ; rinse in water ; scratch-brush with a circular motion ; then gild.

Care of Oil Stone.—Keep an oil stone covered when not in use. Clean it often with benzine, turpentine or soap and water. Invariably use a good quality of oil—fine sperm oil is the best. If the sperm oil is not liquid enough, add a little clock oil. Do not put too much oil on the stone—it will cut no faster for the addition.

Soldering Britannia.—For soldering Britannia use the usual chloride of zinc soldering fluid with a little sal ammoniac in it. An easy-flowing solder can be made of tin, one part ; bismuth, one-half part ; lead, one part ; carefully melted together at a low heat.

Transparent Cement.—A transparent cement for porcelain is prepared by dissolving 75 parts of india rubber, cut into small pieces, in a bottle containing 60 parts chloroform; to this add 15 parts gum mastic. Let the bottle stand in cold water until the ingredients have become thoroughly dissolved.

To Remove Rust.—A French industrial paper gives the following receipt for a paste that will remove rust and not scratch the finest polished surface : Cyanide of potassium, sixteen grains ; soap, fifteen grains ; chalk (blanc de Mendon) thirty grains ; water sufficient to make a thick paste.

Defects of Chronometers.—The special defect of the chronometer escapement—its liability to set—might, perhaps, be partially avoided by the employment of a detent spring, as short as it can be safely made. A long and slender detent must be liable to small, yet perilous vibrations, from the jerks which it receives in pocket wear.

The Eye-Glass.—The usual form of a watchmaker's glass is a convex lens an inch in diameter, mounted in a horn. Though sometimes extra strong glasses are used for special purposes, the focus for general work ranges from two to four inches. Some workmen find the muscular exertion of supporting the glass irksome, and attach it to a wire held in the mouth or behind the ear, or to a light spring coiled around the head. Eye-glasses for lightness may now be obtained mounted in cork. Holes are often drilled through the mounting to prevent the glass being dulled by the collection of moisture on it. There is a very superior achromatic glass with two plano-convex lenses, which has the double advantage of giving a perfectly colorless view with a flat field. Watch jewelers use a glass with double lenses, half an inch in diameter, and with a very short field.

Theory of Friction.—The work absorbed by friction on an inclined plane is proportioned to the angle which the plane makes with the base, which is here a line drawn through the tangents to the wheel-teeth at entrance and exit. This angle is reduced : 1, by diminishing the angle of the pallets ; 2, diminishing the number of teeth scaped over ; 3, diminishing the number of teeth of the wheel. Now, if we take a wheel with fifteen teeth, and pallets scaping over three teeth, and impulse of 8° on the planes only, and we replace these pallets by others scaped over two teeth, giving the same impulse, we should diminish this angle ; therefore, the friction would be less, but that does not state the whole case. In both instances the resistance arm is equal in length, and the arc it passes through is the same ; but the power arm is shortened in the second instance, when the resistance to the passage of the wheel-teeth is greater, and friction being proportioned to pressure, the ultimate result is the same in either case, the work absorbed by friction being similar in amount.

TRADE GOSSIP.

—On March 17 R. W. Bentley, of Valdosta, Ga., sold out his business to R. T. Goodman & Co.

—Fisher & Sons, between the 1st and 10th of April, will move their business from 1 Maiden Lane, New York, to 63 Nassau street.

—Jeweler Rose, of Ouray, Col., is a unique advertiser, his latest scheme being an envelope for holding reserved seat tickets in Wright's Opera House, that town.

—The business of the late Sam'l C. Jackson, 180 Broadway, New York, manufacturer of cases, will be continued as usual under the management of Theodore C. Steinhaus, who has been Mr. Jackson's confidential manager for the last twenty years.

—Manufacturing jewelers who are on the lookout for factory space should not fail to inspect the fine new six-story factory building erected by Geo. W. Shiebler, on St Mark's and Underhill avenues, Brooklyn, N. Y. It is within twenty minutes from the East River ferries, and in the neighborhood of Prospect Park. It has light from all sides, fire-proof vaults, steam in abundance, elevator, etc. There are at the present writing two and one-half floors to rent, the first and the top and one-half of the third floors. Mr. Shiebler can be seen at 8 Liberty Place, New York.

—On March 1, the firm of Wade, Davis & Co., Plainville, Mass., manufacturers of plated jewelry, was dissolved by mutual consent, Louis Heckmann, retiring. On the same day a new co-partnership was formed by the remaining partners, William H. Wade and Edward P. Davis, and Charles A. Whiting, who for years had been the firm's representative. The firm name remains unchanged, and the firm will continue to manufacture the same attractive and salable styles of jewelry which have characterized their lines during past years. Mr. Whiting retains the New York office at 198 Broadway, where he is ever pleased to see his many friends.

—We desire to call the favorable attention of the trade to the advertisement of the Empire Gold and Silver Plating Co., 75 and 77 Nassau street, New York. Mr. Vallentine, late of Jeandheur & Vallentine, is the manager of the establishment, and this is a guarantee that the work entrusted to this firm will be executed both faithfully and promptly. Mr. Vallentine, from his long experience, cannot fail to give the utmost satisfaction, and he has now at his command special facilities for doing work of the first class at most moderate prices.

—A key holder which is serviceable and safe is an exception, but such an article is the "Waltham" key holder made by the Waltham Watch Tool Mfg. Co. It consists of a chain of steel, nickel plated, and a clasp composed of adjusting cross bars of German silver. The clasp serves also as a name plate. When closed all ordinary keys pass freely over the fastener, and when open the cross bar serves as a safety catch to prevent keys from dropping off the chain. The holder is substantially made, sells at a low price, and for the convenience of the trade is put up on handsome colored cards, one dozen on a card.

—Jacob Friedlander, father of the members of the well-known house of R. & L. Friedlander, 65 Nassau street, New York, on March 15, celebrated his sixty-fourth birthday. Mr. Friedlander retired from the business six years ago, but every day sees him at the establishment, "to help out the boys." He has been connected with the jewelery trade for over forty years, and although he has reached a ripe age he is as active to-day as he was twenty years ago. His great pleasure is to see his "boys" succeed in business. Wishes that he may yet enjoy many years of health, and that the same success may attend the efforts of his sons as it did him while he was at the helm are cordially extended.

—Mr. Decker, of Cattelle & Decker, 20 Maiden Lane, New York, started on his business trip last month. J. C. Cooke, representing the firm, is now among the jewelers of Michigan. This firm's stock of silver novelties comprises many new designs in snake rings, tablets, link sleeve buttons, scarf pins, stamp boxes and bangle bracelets. We wish to call the attention of the trade to the fact that there is not a single piece sent out by this house that is not "sterling silver." In these days when so many silver novelties, sold for sterling silver, are but of composition metal, this fact is very important to the retail jewelry trade.

—G. H. Richardson, of J. W. Richardson & Co., and wife left for a trip through the south on March 26.

—The Gorham Manufacturing Co., last month, sold to the Northern Pacific Railroad Co., silver ware for use in their dining-room cars, to the value of $11,000.

—The old established silver manufacturing house of J. B. & S. M. Knowles, of Providence, R. I., will, in a few days open extensive showrooms in New York, at 860 Broadway, corner of Union Square.

—On March 19, Richard W. Miles, of the Meriden Britannic Co., Meriden, Conn., sailed for Europe by the *Britannic*. He will assume the general management of the Meriden Company's Paris establishment.

—The Waltham watch tool companies were never employing so many hands as at present, and are all running to their utmost capacity to keep up with orders. The prospect for steady trade for the year to come is excellent.

—Jewelers are reminded that there are still some workshops to be let in the new building in Gold street, near John street, New York. This building is specially adapted to jewelers. Apply to C. S. Platt, 4 Liberty Place, N. Y. City.

—C. T. Voelker, 15 Maiden Lane, New York, does a flourishing business in diamond mountings and diamond jewelry. The goods which Mr. Voelker manufactures are of strictly 18 karat gold and are elegant in design and finish.

—About April 15, D. De S. Mendes & Co. will move from 49 to 53 Maiden Lane, New York, where they are having an extensive diamond cutting establishment fitted up. Lou Mendes returned, last month, from the west, and reported that it was the most successful trip he has ever made.

—Adolf Fouser, the party who was detected pilfering some bronze ornaments in the clock department of S. F. Myers & Co.'s store, 48 Maiden Lane, New York, on the afternoon of March 3d, was sentenced by Judge Reilly, at the Tombs, to six months in the penitentiary.

—Nicholas Muller's Sons, of 117 Chambers street, New York, manufacturers of bronzes, etc., offer to rent part of their large store, preferably to a silver ware house. This is a good chance for a Connecticut silver ware manufacturer who desires showrooms in New York, to secure them in the right locality.

—A beautiful painting has just been placed on exhibition at Vorce's art gallery, Hartford, Conn., entitled "Easter Offerings," by T. Sedgwick Steele, erstwhile a member of the jewelry trade. A Boston firm is soon to publish a fine etching of Mr. Steele's large trout picture, "Net Results." Mr. Steele has just been elected an active member of the Boston Art Club.

—Every jobber should have J. W. Richardson & Co.'s new catalogue which has just been issued, and which contains 172 pages of illustrations of emblem pins, masonic pins and charms. The illustrations are very fine in workmanship, and the book itself is very tastefully got up. It can be obtained by the jobbing trade free of expense by addressing J. W. Richardson & Co., 196 Broadway, New York.

—The Crescent Watch Case Co., finding their present factory in Brooklyn, N. Y., inadequate to the increasing demands of business, have purchased a large tract of land near Newark, N.J., upon which it is proposed to erect a factory, covering 13,000 square feet, and consisting of three stories and basement. A number of cottages for the heads of departments will be erected on the adjoining grounds. It is estimated that the new factory will cost about $75,000.

—The Meriden Britannia Company's new annex showroom has just been completed. It is very handsome, being finely finished and decorated in hard woods, and lighted by electricity. Altogether it is a beautiful addition to the company's brilliant main showroom; in this room, cut glass and fancy goods will be displayed. The company's main office has also been handsomely improved.

—A meeting of the creditors of the Riley-Osborn Manufacturing Company, fancy metal goods, at No. 529 Broadway, whose factory is in Newark, was held March 12 at the Astor House, New York. The statement presented showed liabilities $68,591, and nominal assets, $384,000, consisting of open accounts, $57,000; bills receivable, $11,000; machinery, $160,000; real estate, $100,000, mortgaged for $50,000; stock on hand or in process of manufacture $78,000; stock of other companies, $28,000. The company asked an extension, which was unanimously granted.

—D. S. Betz, Frostburg, Md., is now a graduate optican.

—L. C. Reisner, formerly of Mercersburg, Pa., is now with Walter C. Herr, Lancaster, Pa.

—Mr. Frank Hollar and wife, Shippinsburgh, Pa., have returned from Mexico, whither they went last January to spend their honeymoon.

—George Rudisille, Lewistown, Pa., has just returned from the south, whither he went to plant some of last year's profits in Virginia soil.

—Casklin Bros., jewelers and opticians, Harrisburg, Pa., have closed out their entire stock and fixtures, and fitted up expressly for the optical business. Having put in tools and lathe for special work and scientific examinations.

—C. J. Welty, Carlisle, Pa., who has the tidiest jewelry store in the Cumberland Valley, is now in California for his health. Louis A. Townsend, of Bloomsburg, Pa., is in charge during his absence, and well taken care of it is, too.

—W. W. Rudisill, Altoona, Pa., has purchased a third interest in 1,500 acres of coal land in Somerset County, Pa.; before the deed was delivered they refused a bonus of $5,000. The company are now opening up the mines, and have about closed with Pittsburgh parties to operate them.

—Walter C. Herr, one of Lancaster, Pa's., most popular jewelers, has had his room repapered and painted, and added other improvements which have a very pleasing effect. Mr. Herr has also secured the services of Prof. J. T. Little, of Baltimore, the well-known eye specialist, who will look after the special optical work.

—Lancaster, Pa., is to have a factory for the manufacture of optical glass. It is being erected by the Highland Manufacturing Co., and it is expected to be in operation by September. This will be the only factory in the country making optical glass exclusively, and it is said that the finest grade of material will be used.

—A. Wittnauer, successor to J. Eug. Robert & Co., 30 Maiden Lane, New York, sole agent for the Longines and Agassiz watches, keeps constantly a complete stock of materials for these watches, and can furnish any part the dealer may require. This fact dealers will do well to remember, as it will often prove advantageous to them.

—A very excellent substitute for an elevator in buildings, where there are no such convenience, is the contrivance utilized by Henry Goll & Co., 6 Liberty Place, New York. A speaking tube on the ground floor, puts you in communication with the office up stairs, and if you have a package to deliver a satchel is lowered which conveys to the "Watch Case Sanitariums," whatever is wanted.

—A circular has been issued by the manufacturers of the celebrated "Princess" rings, announcing that they will soon be prepared to offer patent interchangeable initial rings; it will combine the excellence of the "Princess" ring with the interchangeable feature, which allows the initial to be taken off and put on as often as desired, requiring no tools to perform the operation. It is said to be an extremely simple and unique arrangement.

—The Geneva Optical Co., of Geneva, N. Y. and Chicago, Ill., have established a house in Denver, Col., which has been incorporated under the laws of the State of Colorado, and which will be separate in its business management. E M. Cole, formerly with the American Optical Co., of Southbridge, Conn., and A. J. Agnew, will have charge of the business, which will include manufacturing and jobbing, and will supply the Rocky Mountain trade.

—Lapp & Flershem, 92 to 98 State street, Chicago. Ill., who are always announcing something of interest to the trade, have issued a number of circulars displaying illustrations, prices, special discounts, etc., of new watchmakers tools, clocks, Brotherhood of Railway Trainmen emblems, etc. They announce that in consequence of the advance in the cost of diamonds and other changes in discounts, etc., since the issue of the 1890 "Busiest house in America" catalogue, they have issued a new and corrected discount card.

—On February 12, the copartnership existing between J. Eugene Robert and A. Wittnauer, under the firm name of J. Eugene Robert & Co., was dissolved by mutual consent. Mr. Robert retiring from actual business. Mr. Wittnauer continues under his own name as successor and signs in liquidation. He notifies the trade that he will continue without any change whatever, the importation and sale of the well-known watches and watch movevents in which the house has so long dealt, and which has rendered it celebrated throughout the country.

—Oppenheimer Bros. & Veith, of 35 Maiden Lane, New York, notify the trade in this number of THE CIRCULAR, that they have withdrawn from the National Association of Jobbers in American Watches, and that they have been prompted in this action by a desire to better serve their customers. They have completed arrangements which will enable them to supply the trade with movements and cases of all makes, at the lowest market prices. They will also carry a full assortment of Dueber-Hampden Watches and Deuber cases.

—The Wm. Rogers Manufacturing Co., of Hartford, Conn., reports that their sales for the last year exceeded those of all previous years, and that the volume of business is steadily increasing. The company have recently established a branch factory at Norwich, Conn., where they manufacture all their own knife blanks, carvers and table cutlery; they are thus the only company in existence owning the leading Rogers trade marks who make their own blanks. A number of new designs and patterns of flat and hollow ware have been added, making a very complete stock. The company's Anchor Roger trade mark is having a great sale throughout the country, Any dealer sending his card will receive an elaborate and gold lettered sign free of charge.

—We had the pleasure of looking over the productions of the factory of Moore & Horton, 11 Maiden Lane, New York, and were gratified at the evident purpose of this old established house to keep in the front ranks of the trade in producing new and tasteful designs in white stone goods, rings, ear rings, bracelets, lace pins, studs, collar buttons, etc. Diamond jewelry is one of their staple productions, but the thing that struck us most forcibly, was the diamond-like lustre of their brilliants. On mentioning this it was explained, that they had for many years the opportunity of the first selection from the stock of two of our largest importers, so that the stones are always the best of their kind. The prices for these standard goods are very moderate.

—The tide of watch case factory, Newark, N. J. takes its way. During the past month the American Watch Case Company and the Thistle Watch Case Company have been incorporated in that city. The former's places of business are designated as Newark and New York, and the declared objects of the incorporation are the manufacture and sale of watch cases. The incorporators are Otto H. Oppenheimer, of Chicago, Ill.; Victor Nivois, of Brooklyn, N. Y., and Henry Leffert, of Newark. The capital stock is $50,000, $10,000 being paid in. The latter company have been incorporated with a capital stock of $8,000, all paid in. John N. Lake, Robert J. Quigley, Alexander Milne, William K. McNaught and Fred T. Johnston, are the incorporators. The factory will be located in Newark.

—Woodside, N. J., is soon to have a watch case factory. Thomas Benfield, whose watch case factory is at present at 78 Barclay street, New York, has instructed Schweitzer & Diemer, architects, of New York and Newark, to prepare plans for the factory. The building is to be 100 feet square, with four extensions. The boiler and engine-room is to be 36x24. The interior walls throughout the building are to be finished in enameled bricks. On the second floor are to be complete living apartments, equipped with all modern improvements. For the use of the employees, in addition, there will be a billiard-room, reading-room and ample toilet accommodations. Orders have been received by the architects to spare no labor or expense in making the new building an ornament to the town wherein it will be located.

—Kendrick & Davis, the widely known manufacturers of watch keys, have just issued a pretty novelty in bench keys (illustrated below) that will undoubtedly have a good sale. The new feature consists of the handles of the keys being made of celluloid, the ends and pipes remaining, as usual, finely finished and nickeled. The



No. 1.



No. 2.

keys are tastily gotten up in a handsome box, and in a large variety of colors, no two keys in a set being of the same color. Each key being of a distinct color, it is easy to distinguish the size. The keys are made in two numbers, No. 1 being the stem wind, and No. 2 being in sets of 3, 4 and 6.

—G. C. White, Jr., of Rogers & Brother, and H. E. Beguelin, of Cross & Beguelin, New York, during the past month spent a few weeks in the south, and partook of the many pleasures that sunny region affords.

—J. F. Fradley & Co., makers of gold-headed canes and silver novelties, 23 John street, have rapidly removed all traces of the recent fire in their factory, and will be running full again in about a week or ten days.

—Retailers who have not yet secured one of the handsome little trade mark signs sent gratis, by the Wm. Rogers Manufacturing Co., Hartford, Conn., should send for one immediately, enclosing business card, and doing us the favor to mention this paper.

—D. F. Foley & Co., who have been since commencing business at 23 Maiden Lane, New York, have taken temporary offices in the rear of the first floor of 180 Broadway. On May 1, they will occupy the present quarters of Marx & Weis in the front of the building.

—The business of the late J. B. Laurencot, importer of optical goods, will be continued as heretofore at the old stand, 33 Maiden Lane, New York. J. E. Laurencot starts this weeks for the West on a business trip, and Mr. Laurencot, Jr. sailed for Europe last Saturday by the French steamer.

—E. R. Stockwell, 19 John street, is receiving many orders for class plins and rings from all parts of the country. The opening of the sporting season also brings a lively demand for shooting, aquatic and athletic badges and medals, in which he has earned an enviable reputation for originality of design and reliable workmanship.

—The Pairpoint Manufacturing Co., of New Bedford, Mass., were so crowded for room, last season, that they are now building an addition to their factory, about seventy feet in length and four stories in height. The hollow-handled, seamless knives, made under their patent, are becoming very popular with the trade, and the company is abundantly satisfied with the outlook for the year.

—L. A. Cuppia, 42 East 14th street, New York, manufacturer of silver cane heads and silver small wares, are producing some new and exceedingly handsome patterns of scroll hairpins with unique convolutions. A line of cane heads, with silver electro-deposited on bone or fancy woods—a very handsome line indeed—is also being produced, besides cane heads of original shapes ot mother of pearl and silver combined, etched silver, etc. Mr. Cuppia is also carrying in stock an almost unlimited assortment of small wares, containing numerous novelties.

—The Orvis Gold Solution advertised on another page, will prove a boon to every retail jeweler. Its merits have been tested by hundreds who have used it and would not now be without it for three times its cost. It is made of pure gold and not of bronze, it never fails to give a good color even to the most shop-worn goods, and in lasting properties it is far ahead of anything of the kind in the market. Retailers who have not yet given it a trial are advised to send to any of the jobbers named in the advertisement. Orvis' Diamond Oil for drilling in glass, porcelain and other hard substances, will also prove invaluable to the watchmaker.

—A. J. Logan, Waltham, Mass., is getting out an improved beat block, provided with holes for the reception of the screws of a Swiss watch, which are almost certain to become mixed up, if they are thrown carelessly upon the bench. He has just shipped to England a large order of $\frac{1}{1000}$ inch jaw and depth gauges as a result of his advertisement in THE CIRCULAR. So great is the demand for the improved "Gem" screw driver with screw thread, that preparations are being made to turn them out in much larger quantities. Among the recent improvements in his plant is a plating department, which will give him additional facilities for the prompt fulfillment of orders.

—James W. Miller, successor to the firm of Miller Bros. & Co., 37 Union Square, New York, has added numerous new patterns to his celebrated line of initial goods, making it more complete than ever. New patterns in diamond, Etruscan and opalized jewelry, have also been added. Regarding the last mentioned class, by a patent process owned and used exclusively by Mr. Miller, the surface of the jewelry is composed of a checkered pattern of different colored gold, representing the colors seen in the opal. The effect is particularly effective and beautiful. This opalized work is applied to lace pins, lockets, and other classes of jewelry, though principally to sleeve buttons. The firm's line of monogram goods, is complete and attractive as ever, and it is safe to say that no manufacturer in the country can cope with this firm in this line. J. W. Hagan for years identified with this house as their salesman, and who recently severed his connection, has been re-engaged, and is now among his old friends in the far west.

—Smith & Knapp, 182 Broadway, New York, have issued their neat little price list of movements and cases. Hereafter this publication, which is confidential, and is distributed to the trade only, will be issued every three months. Besides the prices of movements and cases, the book contains a diamond table. The firm announce that they manufacture gold cases, and consider them equal to any in the market; that in addition to a comple stock of American watches of all grades, that they carry a large assortment of diamonds and other precious stones, loose and mounted of their own importation.

Professor K. Einsiedel, for the past year assistant instructor in the Chicago Horological Institute, Chicago, died Feb. 26. He had been ailing for several months and had been constantly under the doctor's care during all this time. He leaves a wife and a young son. The deceased was a native of Germany and had been in this country but a short time when he was engaged by the management of the Institute. He learned his trade in Grossman's School of Horology, Glashütte, and was an efficient and painstaking instructor and a tireless worker. He had but just assumed the charge of the theoretical instruction in the Institute, which position he was well qualified to fill, when death stepped in.

—J. B. Bowden & Co., 192 Broadway, New York, whose name is almost synonymous with "rings," have just placed upon the market a line of thoroughly wrought solid gold seamless plain rings, the process in the manufacture of which is fully covered by patents. In this new ring the surface of the gold is more dense, thereby being susceptible of a superior finish, all imperfect joints, thin edges and other defects are avoided. The ring is absolutely without solder or seam and all stamps are uniform in depth and never irregular. A point worthy of remembrance is that the manufacturers will make any "seamless" ring either a size larger or smaller, without additional charge.

—Among the advantages which the student will find at the Waltham School of Horology, under the able direction of D. D. Palmer, may be mentioned the numerous delicate appliances for the performance of many of the finer operations in watch work. These tools are the result of Mr. Palmer's ripe experience in this line of investigation, and are manufactured no where else in the country. Students get the full benefit of all these ingenious methods, which alone will prove a valuable stock in trade to them all their lives long. Between four and five hundred pupils occupying lucrative positions in all parts of the country, testify to the thoroughness and practical nature of Mr. Palmer's instruction.

—R. Blackinton & Co., North Attleboro, Mass., the manufacturers of the celebrated bright cut silver jewelry, offer the following recipes for cleansing it:

SOLUTION NO. 1.—Dissolve a piece of soap, three times as large as an English walnut, in one quart of water; add a wine glass full of ammonia, and use boiling hot.

SOLUTION NO. 2.—Dissolve a piece of cyanide of potassium, twice as large as an English walnut, in one quart of water, and use warm.

The directions for using are as follows: 1st. Wash and brush with No. 1. 2d. Rinse in boiling water. 3d. Dip in No. 2. 4th. Rinse in boiling water. 5th. Wash and brush with No. 1. 6th. Rinse in boiling water. 7th. Dry out in hot sawdust, or wipe dry. This must not be used to clean oxidized work.

—It is now a recognized fact that any dealer who desires to be classified as a progressive jeweler, must carry an assortment of art goods, keramics and the like. The finer class of establishments throughout the country are carrying the celebrated Mexican onyx wares of S. Klaber & Co., the best goods of the class produced. These goods are undoubtedly better than anything imported from Europe, inasmuch as the metal ornaments are more solid and more carefully finished, and no pains or expense are spared to make them thoroughly artistic and reliable; the foreign wares are put together in a flimsy manner, while the Klaber wares are substantial, the onyx portion being of one piece; the designs of the former are copies, while those of the latter are original. The visitor to the showrooms at 47 West 42 street, New York, will see numerous designs in pedestals, clocks, lamps, both piano and banquet, cabinets, tables and small wares, such as inkstands, etc. To convey an idea of the enormous line of such goods that Klaber & Co. produce, over 150 patterns of pedestals alone are constantly carried. The firm make a specialty of order work, and undertake contracts for the ornamentation of public buildings, stores, etc. The magnificent marble work in the lobbies and vestibules of the Chicago Auditorium is the production of this house.

—At the annual meeting of the stockholders of the Gorham Manufacturing Company, held at Providence, R. I., on Wednesday, March 12, G. H. Houghton was unanimously elected agent of the company.

—Mr. I. Pforzheimer, formerly senior member of the well known house of Pforzheimer, Keller & Co., has become an active partner in the firm of Koch & Dreyfus, 22 John street, adding new strength to this already strong and prosperous house.

—Dominick & Haff, the silversmiths, of 860 Broadway, New York, inform the trade in this issue that design patent No. 18,614, for the ornamentation of the handles of spoons, knives, forks and similar articles, granted to them September 18, 1888, has recently been sustained by the United States Circuit Court in a suit brought against prominent manufacturers who were infringing upon it, and an injunction has been granted. The design referred to, which has proved very salable, is illustrated in their advertisement. It is the declared intention of Dominick & Haff to continue to prosecute vigorously all who may be found infringing upon any of their patented designs.

The visitor to the establishment of Frasse & Co., 92 Park Row, New York, cannot help making note of the enormous amount of goods displayed. Everything in the line of jewelers', metalworkers' and machinists' tools and implements and their accessories may be obtained from this house, and as an example of the extent of their line, an assortment of rifflers, numbering 500 kinds in all, is constantly carried, and is undoubtedly the finest and largest in the country. The firm issue a 550 page catalogue containing illustrations, etc., of everything needed by the above named artisans, for which one dollar is charged, this charge, however, being returned on the first $10 order.

—Hayden W. Wheeler & Co., 2 Maiden Lane, New York, have gone extensively into the carrying of diamonds and all varieties of precious stones, and are now displaying enormous assortments from medium price grades upward to the very finest. Importing direct and making special efforts to buy the best of goods, the firm is rendered a competitor worthy of consideration by the best of houses. W. N. Walker, the manager of the diamond department, a few weeks since returned from his regular trip to Europe, bringing with him a large stock of goods containing everything in the line of precious stones. In mounted goods, in pendants, fancy pins, etc., Messrs. Wheeler & Co. are displaying a larger line than ever.

—The well-known jewelers' auctioneer, J. H. French, has just concluded an extraordinary sale at 189 Broadway, New York, in closing out the stock of D. W. Granbery & Co., in connection with that of Ackerman, Bicker & Manvel, of 6 Maiden Lane, who recently failed. The care with which he handled the most valuable goods and obtained large prices for them was surprising and must have proved very satisfactory to the owners. Mr. French seemed equally at home, whether describing a minute repeater or a Doulton vase. Regarding the latter ware, as high a price as $100 was obtained in several instances. Mr. French succeeded in disposing of the entire valuable stocks, including safes and fixtures. His methods seemed to please his audiences, which were composed of solid business men of down-town establishments. At the conclusion of the sale he departed for Cincinnati, O., to supervise the auction sale that is to close out the business of the American Jewelry Co. of that city.

—The largest and finest line of Royal Worcester ware in America is displayed in the new show rooms of LeBoutillier & Co., at 17 Murray street, New York, which have been obtained owing to the continuous increase of business; vases, teapots, sugars, creams, coffees, and fancy pieces, in westeria, cockatoo, maiden hair ferns, colored chrysanthemums, gold and red, tulip, flying swans, raised gold, skeleton leaves, landscape, trophies, scattered birds, moon yellow lotus and a variety of other decorations, several of which the firm control in America are carried in stock. New designs are constantly being added, and the stock contains, at present, numerous novelties. Crown Derby ware is another feature in their business, and many new patterns are shown, Crown Derby Rose Du Barri sugars and creams are especially handsome. Prominently displayed is a complete line of the elegant Belleek ware, made by the Ceramic Art Co., of Trenton, N. J., of which the firm have been appointed sole agents. This ware comes in dishes, jugs, vases, cups, coffees, etc., beautifully decorated or plain. Besides these wares full lines of Doulton pottery in vases, coffees, etc.; Granger, a perforated ware, Cauldon, in tea cups, which took first prize at Paris Exposition, vase, etc., Coalport, beautiful in style and shape, in teas and coffees, pointon vases, large and small, and other famous ceramics are carried in stock. Altogether this stock is one of the best in the country.

—A. Hodenpyl, of Hodenpyl & Sons, 170 Broadway, New York, arrived from Europe March 30 by *La Normandie*.

—The success of the house of Odenheimer & Zimmern, 69 Nassau street, New York, has been so pronounced that the firm have long sought for more spacious quarters to accommodate their rapidly growing trade. In this endeavor they have at length succeeded by securing a roomy floor at 46 Maiden Lane, which is now being handsomely fitted up, and which will afford them better facilities than heretofore for the display of their excellent lines of goods and diamond jewelry. The success with which this house has been favored is not to be marveled at, when we consider the laudable business principles that have governed all their transactions, and the general superiority of the class of goods they have handled. Starting with modest pretensions, it has ever been their aim to give the fullest value for the money received, and the interests of their customers have been their own. Their line, embracing ladies', gents' and children's rings of all descriptions, and the O. & Z. interchangeable initial rings, has become celebrated throughout the jewelry trade. The firm expect to occupy their attractive new quarters by April 15.

—Upon his return from Europe recently, Leroy W. Fairchild, of the Leroy W. Fairchild Co., 189 Broadway, New York, was agreeably surprised by his employees of the gold pen department of his factory with the presentation of the following set of resolutions:

GOLD PEN DEPARTMENT OF THE LEROY W. FAIRCHILD CO.

Whereas, it has come to our knowledge that our esteemed, worthy and generous employer, Leroy W. Fairchild, has been most signally honored by the FRENCH GOVERNMENT,

And Whereas, That government has conferred upon him one of its proud distinctions of merit, the decoration of the Cross of the Legion of Honor, and

Whereas, We, his employees in the gold pen department of his business have this day

Resolved, We tender him our most sincere and heartfelt congratulations, and trust that the future of his business may meet with the same glorious results which have graced its past history.

Resolved, That a copy of the resolution be suitably engrossed and presented to our worthy employer, as a token of our love, respect and appreciation.

MICHAEL E. SMITH, *Chairman*.

MICHAEL F. RICE,
JOHN J. DENNIN,
HERMAN E. KRUGER,
ALBERT H. HOFFMAN,
} *Committee.*

This evidence of the esteem in which he is held by his employees, together with the honors bestowed upon him by the French Government and the judges at the Paris Exposition, should cause Mr. Fairchild to feel proud of the result of his life-long labors in this department of industry.

Among the Watch and Clock Companies.

—The Elgin Watch Co. have a few non-magnetic watches almost finished, and experiments are still in progress.

—The Seth Thomas Clock Co., have secured the contract to furnish a town clock for the court house at Stockton, Cal.

—The New York office of the U. S. Watch Co. is now located at 53 Maiden Lane, where F. S. Baker holds sway, and is happy to see his friends.

—It is believed that the business of the Joliet Clock Manufacturing Co., whose plant at Joliet, Ill., was recently destroyed by fire will be resumed.

—The Seth Thomas Clock Co. are putting a new full jeweled nickel, a seven jeweled nickel and a ladies' seven jeweled gilt movement on the market.

—In a recent issue of the Boston *Herald*, it was stated that the American Watch Co. has a surplus of $1,000,000, after paying the 50 per cent. stock dividend of last April.

—Plans have been prepared for the building of two additional wings to the Trenton factory, one to be 83 feet long and three stories high, the other 76 feet long and two stories high.

—The old factory of the Hampden Watch Co., at Springfield, Mass., though reported to have been sold at auction on March 20, to Aaron Bagg, Jr., for $23,500, has not in reality been sold.

—The Rockford watch factory, it is said, will probably change its location. A syndicate in the north end of Rockford has offered to build a factory capable of accommodating 1,200 hands if the company will move.

—The first watches being turned out at the Otay factory are fifteen jewel, gilt, stem wind and set, patent regulator; adjusted, double sunk dials and Arabic figures. They will be named F. A. Kimball, Otay and Calif.

—The E. N. Welch Manufacturing Co. and the Boston Clock Co., Wm. H. Atwater, agent, have removed their store and salesrooms from No. 6 Warren street to 13 Maiden Lane, New York, where they will be better able to serve the trade, as well, if not better than before.

—Pueblo, Col., sent last month to Aurora a citizens' committee to try and secure the watch factory and machinery and tools to move them to Pueblo as the nucleus of their proposed watch factory. The citizens of the former town are taking the stock of this enterprise liberally.

—Morris Eisenstadt was March 1, succeeded by Robert S. Hubbel, as St. Louis, Mo., agent of the Dueber Watch Case Manufacturing Company and the Hampden Watch Company. Mr. Hubbel was for several years connected with the Non-Magnetic Watch Company, St. Louis.

—William L. Gilbert, President of the William L. Gilbert Clock Company, of Winsted, Conn., whose benefactions are well-known, last month added another generous deed to his already long list. He gave $40,000 toward the endowment of the Gilbert Seminary at Washington, Mo., in addition to a $10,000 donation that he previously made.

—The Lancaster Watch Co., Lancaster, Pa., is concentrating all its energies upon the new model six size movement, which, it is claimed, will be equal to the best in the market. With so experienced a man as H. J. Cain in charge of the factory, the trade will look for nothing but the best, and are on the tip-toe expectation for the new goods.

—S. T. J. Byam, ex-superintendent of the Trenton Watch Co., has accepted a position in the new Lancashire Watch Factory at Prescot, England, to supervise the introduction of American ideas in manufacturing watches. He returned last month from a flying trip to England, and ordered a large number of American watch making machines. He will return to England in a week or so.

—It is said that there are more shares held by employes of the Waltham Watch Company in the co-operative bank than by the employes of any corporation in the world in any similar institution. The amount laid by each month by the hands amounts to a number of thousand dollars, and not only that a large number of the shareholders who work in the factory are borrowers, and hundreds of the neat cottages and double houses that have been put up during the past ten years in this city owe their erection to this excellent institution.—*Waltham Tribune.*

—The two representatives of the Non-Magnetic Watch Co., C. R. Botsford and Frank G. Moyer are now out on their tours, covering the whole country. Mr. Botsford, who visits the jobbers, is displaying a full line of the celebrated Paillard non-magnetic movements, and Mr. Moyer, who calls on the retailers, is showing a fine assortment of complete ladies' and gent's open-face and hunting watches, as well as a number of beautiful novelties in enameled, decorated and complicated watches. They are both pushing things lively and feel satisfied from observation and the results of their works, that a bright spring trade will shortly open.

—The United States Watch Co., of Waltham, Mass., have begun the construction of eight of their famous automatic screw machines, their present number being wholly insufficient to turn out material enough to supply the demand. Several of the factory departments are to be strengthened at once by doubling the machine capacity needed to obtain the product desired by the company during the present year namely, over 200 watches a day. When the construction of the new machinery is sufficiently advanced the erection of an extensive addition to the present factory will be begun.

—From Otay, Cal., comes the report that the experts from the east have all arrived at the watch factory, and work is being pushed forward with all possible dispatch; that arrangements are under way for the establishment ot a watch case factory in that town which is building up very fast under the stimulus of the watch works. The company has voted to subscribe $1,000 toward securing a railroad to Otay. The citizens of that village are expected to raise $10,000 more. At a meeting for the election of officers held last month, H. D. Perry was elected President; Dr. H. P. Woodward, Vice-President; Frank A. Kimball, General Manager, and F H. Wheeler, Secretary. Frank A. Kimball, H. D. Perry, H. P. Woodward, E. H. Miller, F. H. Wheeler, M. D. Hamilton and Mr. Schaffer were chosen directors.

—The Waterbury Watch Co. has a factory it may well be proud of, and to give to the trade who have not had the pleasure of inspecting it an idea of its stately proportions and splendid interior equipment, the company has prepared a large edition of handsome combination photographs of the factory building and the main departments into which it is divided. The main view occupies the center, the interior views being grouped around it. The very elegant manner in which the picture is framed makes it a fit companion for the handsome photographic views of American watch factories with which so many of the jewelry offices and shops are now adorned.

—The ground has been staked off for the extension to the front wing of the Elgin factory, running south. In the vacant room in the factory, combined with this proposed addition, 700 new hands will be employed during the year. It is said that 1,200 additional hands would be put in immediately, if room could be found for them.

—J. Quincy Walker, as general agent of the Trenton Watch Co., last month issued a circular in which it was stated that the company is now being confined exclusively to the jobbing trade; that they have discontinued their office in New York, and that hereafter all orders will be filled and all business transacted from the factory. It also announced that the company's factory facilities are largely increased, and that it is their intention to produce the best low-priced watch in the world. The location of the factory being central, and on the line of the Pennsylvania Railroad, between New York and Philadelphia, an invitation is extended to the trade generally to inspect their works.

—A. C. Smith, Room 22, 177 Broadway, New York, announces that he has placed in the market four new grades of 18 size Paillard non-magnetic movements, making a complete line of seven grades. These movements are fifteen and eleven jeweled, Breguet hair spring and patent regulator Mr. Smith claims that this is the only watch made in America which contains the celebrated Paillard patent non-magnetic compensation balance and hairspring. The movements are manufactured by the Peoria Watch Company, of Peoria, Ill., who have remodeled and equipped their plant with the latest improved machinery, and no pains are spared to make their watches superior timekeepers.

—Ambrose Webster, of the American Watch Tool Co., in the *Waltham Free Press* reviews the accomplishments of Waltham mechanics in developing watch making A. L. Dennison, the "father," is now England's largest casemaker. The exhibit of the American company at London in 1885, caused the inception of the Prescot enterprise. "Besides Mr. Dennison," he says, "there are many others worthy of mention. First, Charles S. Moseley, who in 1860 was considered the best designer of tools and machinery for watch work, and who was one of the prime factors in starting the Elgin factory, taking with him many others, among them George Hunter, who has developed into the best general manager of watch factories in the world, John K Bigelow, Charles E. Mason and Otis Hoyt, who afterwards seceded and were prominent in starting the Illinois Watch Company, of Springfield, Daniel R. Hartwell and P. S. Bartlett and James H. Gerry, who left Waltham and started the United States Company, Marion of which he was for a long time superintendent, and afterwards superintendent of the Illinois company and the Howard Company, of Roxbury, and is now in New York at the head of a synchronizing clock company. Also S. T. J. Byam, formerly superintendent of the Trenton Company, now superintendent of the Lancashire Company, of Prescot, England; W. W. Hastings, superintendent of the New York Standard Watch Company; W. W. Owen, superintendent of the Columbus Company; William B. Lerned, at one time superintendent of the Howard Company; Henry J. Cain, for many years superintendent of the Hampden Company, now vice-president and general manager of the Lancaster Watch Company. Besides these names are many skilled workmen who have learned the business in Waltham, and have gone out and become foremen and draftsmen for the various watch factories, whose names are legion. A. B. Berry, now draftsman of the Yale & Towne Lock Company, of Stamford; H. C. Behenna, who has gone to Prescot, England. Besides these mechanical advactages we are warranted in looking at the financial advantages, stimulated by the Waltham ability; the fortunes which have been accumulated by the house of Robbins & Appleton, not to mention several citizens of Waltham, who are living on the income which was derived from the Waltham factory, and the immense development of our city, the immense capital and plant of the Elgin Watch Company, now turning out the largest number of movements per day of any in the world, and the wonderful dividends which have enriched the limited number of stockholders."

—The editors of some of the watch town local newspapers have for the past two months been publishing derogatory statements regarding the present state of several of the watch companies, predicting failure for some and asserting the utter smash-up of others.

It is, perhaps, needless to say that these assertions are too often without proper foundation. The latest sensational article recently appeared in the Rockford (Ill.) *Gazette*, and undertook to castigate the manager of the Manhattan Watch Co. "This manager has a history. He formerly worked in a Connecticut tobacco factory. He finally drifted into watchmaking, starting at Waterbury. He soon began to impart knowledge to the superintendent, and his resignation was tearfully asked. He's been the rounds since, Rockford had him as assistant foreman of the pinion roughing department. During the temporary illness of the foreman he took the helm. He used to wear a leather thong round his neck with an eye-glass dangling. When a chance visitor would stroll through his department he would immediately clap an eye-glass to his eye and glare at some inoffensive piece of material. He soon put the department three months behind, and he was given a jolt that made his teeth sweat. Next he swoops down on Elgin, then Springfield and Canton, and so on ad nauseam. For quick action Nellie Bly's time was nowhere. He's drawn pay out of more different watch companies than any man on top of the earth." The present manager, who has for years past been at the helm, has always commanded the respect of the trade, and has succeeded in placing the Manhattan Co. upon a solid foundation. The article refers, undoubtedly, if to any living being at all, to a man the Manhattan Company tried in their pinion department, with a view to making him foreman of that department, if found satisfactory. They soon decided that he was not the person wanted, and he was discharged. He had once been in the Rockford factory, and may have communicated with some one there that he was the manager of the Manhattan Co., the newspaper taking advantage of the nervy assertion.

A STATEMENT FROM C. D. ROOD.

UNDER a sensational headline, a recent issue of one of the Aurora (Ill.), local newspapers undertook to review the negotiations of C. D. Rood with the committee of the Aurora Watch Co.'s directors, in libellous language, alleging dilatoriness on Mr, Rood's part with a desire to break his agreement. The publication of this article in the local paper *per se*, would hardly warrant comment, but as it was quoted by other watch town local papers, and formed the basis of reports in trade journals, we deem a clear statement of Mr. Rood's part in the transaction necessary, and we are indebted to him for the following presentation of facts.

During last November and December Mr. Rood was waited upon by a committee of the directors of the Aurora Watch Co., who requested him to investigate their plant, with a view to purchasing it. In December Mr. Rood inspected the factory and wrote the committee making a proposition to purchase a controlling interest in the concern, the terms briefly being that he should have it free of all encumbrance, that he would take $\frac{55}{100}$ of the stock on a basis of $100,000 for the entire plant, including all the assets of the company, and that the Aurora people should subscribe for the remaining $45.000 of the stock. In this proposition Mr. Rood especially emphasized the clause that he would complete the purchase only if no conditions whatever in regard to the location or time of running the factory were stipulated.

On Jan. 11 Mr. Rood wrote Assignee Evans a letter, from which the following is quoted:

January 11, 1890.

Col. Evans, Assignee:

MY DEAR SIR—I am in receipt of a letter from Mr. Weber, stating he thought on the following day you would be able to advise me of the completion of the arrangements of transferring the watch factory assets.

You have undoubtedly explained my position to all who are, or may now think, of being interested in the new company.

We talked it over during my last visit to Aurora, and in my letter of January 1 I attempted to even more fully, if possible, explain the terms as I make them for the purchase, and I think this position should be fully understood by all parties who are interested, viz., that I will not purchase with any conditions to continue the business in any specified locality, and if these patent suits, or any other reasons should at any time make another course than running the business in Aurora seem best, I should expect all would agree to save our investments and prospective profits in the purchase.

In reply, Mr. Rood received the following letter from J. H. Weber, general manager of the company:

Aurora, Ill., January 14, 1890.

Mr. Chas. D. Rood:

DEAR SIR—The court to day entered an order approving or confirming the sale by the assignee. Have just wired you in the assignee's name to that effect. Evans wants to know when you come in town, so he can meet you in Chicago before you come out here. Your two letters of the 11th were received yesterday. I have talked the matter over with the assignee, and I think he understands your position. Yours truly, J. H. WEBER.

On receipt of this communication Mr. Rood telegraphed to Mr. Weber, "Is assignee ready to close—and stock all subscribed—unconditionally," and wrote as follows:

January 16, 1890.

J. H. Weber, Esq.:

MY DEAR SIR—Your esteemed favor of the 14th inst. is received to-day, and message on the 14th. I replied next morning (15th); expected to leave here 17th evening and be at Palmer House next morning. 18th, and asked if all was ready —to which I have not had reply—and this P. M. wired you, "Is assignee ready to close—and stock all subscribed—unconditionally," to which I hope to receive answer this evening. I have no time to waste, and don't want to do anything about perfecting or completing arrangements.

Yours very truly, CHAS. D. ROOD.

The letter of January 15 referred to was as follows:

January 15, 1890.

J. H. Weber, Esq.:

MY DEAR SIR—Your letter of 10th just received, Has the $45,000 been subscribed, and will the assignee accept them as so much towards the $100,000? I only pay $55,000, and do they, the subscribers, also fully understand my position which I explained when there, and in my letters of January 1 and 11. I don't want to use but little time, and everything can be made ready before I am called.

Yours very sincerely, CHAS. D. ROOD.

From these communications alone it is clear that Mr. Rood's position was thoroughly understood by the Aurora people, and that the charge of dilatoriness and breech of agreement is totally unwarranted. Later he wrote the Aurora people that he would be in their city on January 23 and would next morning take the factory and pass the papers. The next morning the papers were not passed, owing to the fact that one of the bondholders who had placed his papers in one of the local banks to be made over in the transfer had advised the bank not to deliver them without a written guarantee that the factory would remain in Aurora. On this day, Assignee Evans stipulated, as the sole condition, that Mr. Rood should run the factory in Aurora for six months. This Mr. Rood agreed to do, but told him that he would not be able to do anything with the factory until after February 10, the date of the meeting of the stockholders of the Hampden Watch Co., of which he is president and treasurer, at Springfield, Mass. He then returned to Canton, leaving the committee to arrange the matter between themselves.

The business of the Hampden meeting, together with his father's illness, detained Mr. Rood in the east, and it was not until March 5 that he could visit Aurora. On that date accordingly Mr. Rood, accompanied by H. J. Cain, former superintendent of the Hampden factory, met a committee of the watch company's directors and Assignee H. H. Evans, with the object of consummating the transfer of the property. The discussion that ensued was of quite a heated character. owing to Mr. Rood's positive refusal to in any way bind himself not to remove the factory from Aurora. After considerable discussion, Assignee Evans pronounced the following ultimatum: "If you have the least intention of moving that factory from this city, you may as well stop right now. You can't have it, and that is all there is about it." This ended the negotiations.

THE JEWELERS' SCHOOL OF LETTER AND MONOGRAM ENGRAVING.

THE present movement for higher technical education in the watch making and jewelry trades is further strengthened by the starting of the Jewelers' School of Letter and Monogram Engraving," by the well-known firm of Wendell & Co., 63–65 Washington street, Chicago, special manufacturers for the retail trade. This school was organized in November of last year to fill a long-felt want in the trade, as before that time there was no school devoted exclusively to this branch of instruction, the few good engravers in the country being employed in large retail stores where apprentices were not received. Accordingly Messrs. Wendell & Co. rented rooms on the same floor with their large and well-appointed shop, fitted them up and installed R. O. Kandler as chief instructor, who is not only a good engraver, but possesses the happy faculty of imparting his knowledge to others. Prospects from the first have been bright, students being now enrolled from such extremes as Texas, Washington and Canada.

The students practice 9 hours daily, and the progress they make is remarkable. They can enter at any time, as the instruction is individual and each one is advanced as rapidly as he becomes proficient in the work set before him. The school is situated in the same building with the factory, and is a large, well-lighted room with all modern conveniences. One of the chief advantages enjoyed by the pupils is the privilege of the factory, in which all kinds of work are done, and while the proprietors do not think any person can learn more than one thing at a time, useful information regarding all kinds of work can be obtained which is sure to be beneficial to anyone connected with thejewelry trade. Engravers are in constant demand, and good workmen can always secure employment at good salaries. We take pleasure in calling this necessary undertaking to the attention of all who contemplate a course in engraving.



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THE JEWELERS' CIRCULAR
AND
HOROLOGICAL REVIEW.

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GOSSIP OF THE MONTH

☞A full Index to Advertisements and a Table of Contents will be found on Page 5 of this issue.

Subscribers will do a favor by notifying us at once upon the non-receipt of any number of THE CIRCULAR. The mails will occasionally miscarry, but we will cheerfully make good Uncle Sam's little shortcomings by sending another copy to replace any missing one.

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READERS of THE CIRCULAR may recollect the agitation over the drummer's tax about two years ago, and the decision of the Supreme Court of the United States, declaring this tax unconstitutional. After this pronunciamento of the highest judicial authority of the land, it was supposed that the question was forever laid to rest, and that this system of espionage and extortion would be abandoned. But it seems that there are, upon the statute books of some of the Southern states, survivals of this barbarous and unconstitutional legislation, to which it is only necessary that attention should be called to have them relegated to the limbo of the drummer's tax. Under the Acts of 1886—7, of the State of Alabama, no foreign corporation is allowed to transact any business in the state, "without having at least one known place of business and an authorized agent or agents thereat, *who shall there reside.* It is also compelled to file a commission with the secretary of state appointing such agent or agents to represent it, the charge for the same to be $1.00," and every time a corporation changes its place of business it is required to file a new instrument. Under this law, all transactions of the corporation, prior to complying with these demands, are null and void, and punishable by a fine of $1,000, in addition to which, the agent is also subject to a fine of $500 for each offense. The penalty for the non-payment of fines is imprisonment. This law is plainly unconstitutional, being an embargo on interstate commerce. Texas, too, followed the example of Alabama on July 6, 1889, and passed a law requiring any foreign corporation, transacting business within the state, to file a certificate of its articles of incorporation with the secretary of the state and pay to that official a fee in accordance with the amount of its capital stock, as follows: $25 for $100,000 or less; not more than $500,000 nor less than $100,000, $50; over $500,000 and less than $1,000,000, $100; over $1,000,000, $200. Upon compliance with this provision the secretary of state issues to the corporation a permit to transact business within the state for ten years. Until it has complied with these conditions, no foreign corporation has any right to maintain any suit or action whatever, in any court of the state. It will be remembered that the constitutionality of the Texas drummer's act was tested in the United States Courts, and an adverse decision rendered. A test case was also brought before the United States Supreme Court in a suit under the Tennesee law This Texas law of 1889 is evidently an attempt to override these decisions, and it is astonishing that such mediaeval legislation should be persisted in after the repeated refusals of the courts to uphold it. In the writer's opinion, a fine might properly be imposed upon a state, which, in defiance of the supreme judicial authority, continues to enforce laws infringing the constitutional rights of every citizen.

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ELSIE BEE *summarizes her long experience as a fashion writer in a very entertaining article on the "Evolution of Jewelry."* *See page* 73.

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THE subject of Horological Schools is justly engaging the attention of the trade at the present time. It needs no argument to prove that the old system of apprenticeship is among the things of the past, and it is also evident that it is quite as well it should be. No business has been more thoroughly and radically revolutionized than the watch and jewelry trade within the past twenty years; not only is this true as regards the manufacture of watches and jewelry, but in the methods of conducting business as well. We do not propose to go into the length and breadth of these changes, but in this instance to confine ourselves to the consideration of how to enable young men to become efficient and rapid workmen in the arts

which are in request in a modern jewelry store. It must be conceded that the man who repairs and keeps in order the watches for customers, must be the most skillful and efficient workman about a place of this kind, and it is to the proper disciplining of this class of men that we now call our readers' attention. If we give thought to the subject we will see that a fine watch is the most perfect specimen of mechanical skill produced by the hands of man—the very embodiment of science and art. To construct a fine watch, all the sciences and arts are invoked: chemistry, mathematics, and the art of design. That such master-pieces should require all this combination of intelligence and skill to construct, and only demand workmen of inferior ability to repair and keep in order, is the most ridiculous of incongruities. *The man who repairs must necessarily combine, to a great extent, the knowledge and skill of all the workmen who were engaged in the construction.* Now, it is only to our Horological Schools that we can look for such workmen ; to provide such broad and thoroughly trained workmen is the province of such institutions, and it is the duty of the trade to give them every encouragement and support, in order to enable them the better to supply this demand. These schools are comparatively new in this country and need the co-operation and encouragement of the trade they are destined to improve. Many will press forward as instructors and meet with more or less temporary success, but as in all similar enterprises, the fittest will survive. We would warn all who anticipate attending such a school against a common error, which fosters the impression that any school can make a first-class watchmaker of a pupil in three or four months. This is clearly a delusion, and the idea should be banished at once. Workmen who have had years of experience in the older methods can take such a short course of instruction with great advantage to themselves, but for the novice the only thing is to make up his mind to stay at some good school for at least a year, and work industriously. Fortunately we already have a number of such schools in different parts of the country.

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If you have a case in Optics that puzzles you, write it out for Dr Bucklin's department of The Circular, *send it in and you will get an answer.*

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MANUFACTURERS of black onyx goods are frequently called upon by country dealers, to repair or pass judgment upon glass necklaces, bracelets, watch chains, etc. A manufacturer of onyx goods, of course, will not repair such articles, and in consequence there is a good deal of valuable time wasted, which might be saved if the retailer were able to settle the question himself. A simple test is all that is needed to decide it. In the first place, almost all articles of jewelry made of this friable substance, become chipped or nicked after they are worn. Onyx, being a stone and the polished surface being artifically produced, the interior fracture is dull and irregular. But glass and all similar compounds of silicon, present a bright, smooth fracture when broken. To determine, therefore whether a piece of mourning jewelry is made of onyx or glass, examine the small nicks or chips carefully, and if they appear bright, it may safely be set down as glass, or at least not onyx. Retailers will save themselves both time and trouble by remembering this simple test.

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Monograms—*Monograms*—Monograms—FREE *to new subscribers* *See page* 43.

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THE proposition of the Ways and Means Committee to increase the duty on diamonds and precious stones, cut but unset, to 40% met with an energetic protest from many members of the New York trade, and it seemed wise that some concerted action should be taken. A petition was accordingly drawn up by The Circular, and passed around among the precious stone dealers of New York and Philadelphia, strenuously advising against the contemplated increase and recommending that all uncut precious stones be placed upon the free list. The following is a draft of the petition with the signatures appended:

Gentlemen—Referring to the proposition to increase the duty on pearls, diamonds, rubies, sapphires and other precious stones, cut but not set, to 40 per cent. in the revised schedule, we respectfully submit for your consideration the following facts:

There is no other merchandise of such positive value and small bulk as precious stones, and, once being passed into the country and bulk broken, so impossible of indentification. No other country exacts any duty at all on precious stones. A 40 per cent. duty means simply this—an invitation to unscupulous foreign dealers to invade the country with smuggled goods, so that American dealers who will not smuggle must give up business altogether or purchase their goods within the country.

The diamond importing business would degenerate into a contraband trade, and the Government would get little or no revenue from it, and that at an enormous expense for inspectors, detectives, &c. The present duty of 10 per cent. is all that can surely be collected. If the object of your committee is to foster the diamond cutting and lapidary trades in this country we would recommend that all uncut precious stones be placed upon the free list as uncut diamonds now are.

We hope that your committee will give this subject the consideration its importance deserves, and that the suggestions herein made will have their full weight in influencing your decision. We are ready to appear before you by committee, if necessary, and present further facts.

Tiffany & Co.,
Randel, Baremore & Billings,
Alfred H. Smith & Co.,
L. & M. Kahn & Co.,
Peterson & Royce,
Wm. S. Hedges & Co.,
E. Aug, Neresheimer & Co ,
L. Tannenbaum & Co.,
H. Z. & H. Oppenheimer,
Falkenau, Oppenheimer & Co.,
Albert Lorsch & Co.,
Oppenheimer Brothers & Veith,
Stern Brothers & Co.,
Henry Dreyfus & Co.,
Louis Strasburger & Co ,
Bruhl Brothers & Co.,
Max Freund & Co.,
Morris Prager,
D. H. Wickham & Co ,
Grinberg & Glauber,
A. J. Hedges & Co.,
Merrick, Walsh & Phelps,
A. Wallach's Nephews,
Hayden W. Wheeler & Co.,
A. Bernhard & Co.,
Hodenpyl & Sons,
Joseph Frankel's Sons,
W. L. Pollack & Co.,
Smith & Knapp,
Krementz & Co.,
E. E. Kipling,
D. L. Van Moppes,
M. Fox & Co.,
Buhler & Nanz,
L. Bornemann,
Charles Magnus,
Kuhn, Doerflinger & Co.,
Ludwig Nissen & Co.,
S. A. Bryant,
R. A. Breidenbach,
J. M. Lyon,
Cattelle & Decker,
Eisenmann Brothers,
H. C. Hardy & Co.,
Heilbronn & Blank,
Veuve L. B Citroen & Co.,
Richard Oliver & Bloomfield.
E. Adler,
S. H. Roberts,
J. W. Block & Brother,
Jacob N. Bonnet,
Ingomar Goldsmith & Co.,
C. F. Wood,
B. H. Davis & Co.,
Hahn & Co,,
S. F. Myers & Co.,
O. Anderson,
C. Cottier & Son,
Keller, Ettinger & Fink,
H. E. Somerville.
J. Wertheimber,
Samuel Eichberg,
C. W. Schumann & Sons,
C. W. Schumann,
Taylor & Brother,
E. Karelsen,
Jacobson Boothers,
Ludeke & Co.

The Philadelphia signers were: H. Muhr's Sons, J. E. Caldwell & Co., Bailey, Banks & Biddle, Jacob Bennett's Sons, and Simons, Bro. & Co.

The petition was sent together with an explanatory letter to Hon. Roswell P. Flower, member of the House from New York City, and also a member of the Ways and Means Committee. Mr. Flower presented the petition on Tuesday, whereupon the committee concluded to report the duty as it is at present, recommending besides that all uncut precious stones be put upon the free list as uncut diamonds now are. The bill was so reported and The Circular joins with the signers of the petition, in the hope that the ghost of Captain Kid will not be resurrected again by the honorable members of the committee to trouble the dreams of the diamond importers of the country.

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UNDER the prospect of the annual purchase by the government of $50,000,0000 worth of silver for coinage purposes, silver has shown a marked upward tendency during the past two weeks. Whether the bill authorizing the purchase will go through or not remains to be seen, but it is to be hoped the cry of protest and alarm

which is being raised against it all over the land will deter our senators from carrying out this iniquitous scheme to enrich the owners of silver mines at the expense of the people of the United States. The government already has more silver coined than it can legitimately use; the Treasury vaults fairly groan with the accumulated stores It is plain that the people do not need any more silver coin at present. The inevitable result of such a purchase bill as that which the mine owners are now trying to logroll through Congress would be to inflate the currency in the interest of the seller and against the buyer, to give the people a circulating medium which they do not want, to make silver artificially dear to the silverware and other mechanical trades, and—to swell the profits of the big mine owners, many of whom are now sitting in the halls of Congress devising laws which would make the government a party to a conspiracy with them to defraud the people of the United States.

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Read the interesting biography of Adolph Lange, the pioneer watchmaker of Glashütte,

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MR. CHARLES ABEL, of Pittsburgh, recently started to South America in the interest of six of the most prominent manufacturing firms of that city. He will visit Brazil first, where he will remain several weeks; then will proceed to Chili, and from there will journey leisurely northward along the Pacific coast to the Central American States. His mission of culti-vating closer commercial relations with the countries to the South is approved by letters from Secretary of State Blaine; and he also carries credentials of the same kind from the Pan-American delegates. If the Pan-American Congress gives us no direct and tangible results, it has at least directed the attention of the public and of our manufacturers to the subject of export trade, and in so far it has been a benefit.

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Here is a good opportunity for you to get a COMPLETE SET OF MONOGRAMS *at trifling cost Subscribe to* THE CIRCULAR, *and if your name has not been on our books the past year, we will send a bound set of monogram plates*—44 *plates*—2,112 *monograms.*

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IT IS now becoming a custom among the leading jewelry manufacturers to patent the best designs they bring out. They find that it not only deters others from copying, but also helps the sale of the goods by furnishing a guarantee to purchasers that the articles so protected will not be imitated in cheap form, and prices cut as soon as they have put the goods in stock. The courts, too, are becoming more strict in their interpretation of the laws applying to design patents, as shown by numerous recent decisions. In view of the growing importance of the element of design to the jewelry trade, we would advise all who are originators of ideas to protect themselves and their customers in this way.

Prospecting in Ceylon.

THE excitement over the gemming and mining schemes in Ceylon still continues, and experts are busy "fossicking" in Rakwana and its vicinity. Whether any fresh discoveries of importance have been made, however, is a question which it would be difficult to satisfactorily determine at present, for the air appears to be full of all kinds of rumors.



[FROM OUR SPECIAL CORRESPONDENT.]

CHICAGO, April 21, 1890.

The trade in general inform your correspondent that, while trade is in some lines not as good as it might be, it is fully up to that of last year. Some of the country customers are asking for a little extension of time on payment of bills, no cause in particular being given, but it is probably due to the continued rainy weather which has had the result of blocking up the roads completely, and preventing the farmers from marketing their products.

C. H. Knights & Co., report trade ahead of last year, with no failures to disturb the smooth onward course of events. Collections they say are good, and there is every prospect of a "boom" in trade this season.

The Chicago Jewelers' Association have secured elegant new quarters in the Adams Express building, and will remove to the new quarters as soon as the painters, paper hangers, etc., will allow. Through the kindness of Mr. Hurd, assistant secretary, I am able to give you a list of new members since January 1st, '90: Ansonia Clock Co., A. Hirsch & Co., C. F. Happel & Co., L. Manheimer, Meriden Silver Plate Co., Rockford Silver Plate Co., Rockford Watch Co., Gorham Mfg. Co., Pairpoint Mfg. Co., and W. S. & J. B. Wilkinson.

H. A. Spaulding of the well-known house of Spaulding & Co., sailed last week for Europe, the prospective point being Paris, France, where this house maintains a large branch. Mr. Spaulding will make extensive purchases while abroad.

Benj. Allen, says trade at present is fairly good, if anything a little better than last year.

C. K. Giles, of Giles, Bro. & Co., tells your correspondent that the demand for the "Shield case" from all parts of the country is so great that it is impossible for the firm to fill its orders.

"We'er getting good and ready for a large business this season," so says Mr. Burchard, of Simpson, Hall, Miller & Co. Collections they report good.

The Gorham Mfg. Co. have made some extensive changes in their warerooms, taking in more floor space, thereby giving them at least four times as much stock room space as they formerly had.

C. H. Falch, formerly with Giles, Bro. & Co., has just opened up a store in Garrett, Indiana, under the firm name of Falch & Co.

Morse, Mitchell & Williams report good results from their recent cataloguing of the western country, having the effect of increasing their cash sales greatly. This house intends in the future to adhere as far as possible to a strictly cash business.

Hodge & Demarest, western agents for the Hartford Silver Plate Company, have got about settled in their new rooms, and are now in shape to fill all orders direct from their own warerooms.

T. H. Purple, manager for the Holmes & Edwards Silver Co., and the Manhattan Silver Plate Co., informs me that the latter firm are coming out with three hundred new pieces of quadruple plate under the old Lion brand. Mr. Purple has recently taken the agency of the William Rogers Mfg. Co.

Goldsmith Bros., are still presenting their friends "for the asking" one of their little books "Hints on Testing Gold and Silver." M. Goldsmith recently left for the eastern markets for the purpose of buying gold and silver goods.

F. Ternendt recently began the manufacture of initial rings and

'white stone goods" as an especial feature, and is unable to supply the demand with his present facilities.

M. C. Eppenstein & Co., have secured the eastern second floor of the "Mentor" block, corner State and Monroe streets, and will move to their new quarters about May 1st.

About the 15th of May the Illinois Watch Case company will move into their new factory at Elgin, Ills. The machinery, boilers, engines, &c., are now being put in. The building is as complete as can be desired; two hundred foot front, centre front elevation four stories, two wings three stories each, and a boiler and engine house in the rear 40 x 120. The company will start the new factory with about 200 hands employed.

The Excelsior Sign Company will introduce shortly a "novelty" in the way of an out of door sign that will completely do away with the old time "dummy" watch. The appliance consists of an ordinary hollow "dummy sign, with a set of works set in motion by the current from one cell of any ordinary primary battery. The sign will give the time perfectly. The sign has a full tick "double" as in the ordinary watch. There is no doubt that the watch will be made in all sizes, and the price will be such as to admit of the "little fellow" having one just as well as the "big one. This improvement caps the climax in the way of out of door advertising.

The Baltimore & Ohio Railway have adopted the anti-magnetic shield (manufactured by Giles Bro. & Co.), as a protection for their employees. They are using so many electric appliances on their trains that they consider it a necessity. This company is also putting in the Giles time service, with Giles Bro. & Co. as chief inspectors, and sub-inspectors as follows: Falch & Co., Garrett, Ind.; J. B. Eberhart, South Chicago, Ills.; H. C. Bostwick, Newark, Ohio; Henry Dehnel, Sandusky, Ohio, and Mahlon Craft, at Bellaire, Ohio.

Increase of business, necessitating more room, light and better facilities for manufacturing, led the firm of W. S. & J. B. Wilkinson, jewelers' case and tray manufacturers to move to their present quarters about twelve months ago. Trade has so increased since that this firm has been compelled to arrange for more floor space which they must have to accommodate the increase of working force The above will easily give one an opinlon of the demand for this firm's goods.

"We have finished our painting, decorating and general spring changes, and are ready for all the trade we may be favored with," so says Mr. Corey, of the Pairpoint M'fg Co. Mr. Corey still holds to the opinion that the World's Fair will do a "world" of good to Chicago merchants, jewelers and silverware dealers especially. Large buyers in the south are purchasing here now who totally ignored Chicago heretofore..

A new firm has just been organized in Denver, Colo., under the name of the Geneva Optical Co., handling the goods made by the Geneva Optical Co., of Geneva, N. Y. E. M. Cole, long and favorably known as connected with the American Optical Co., and A. I. Agnew are the managers. Mr. Agnew is a thorough optician, and they are just the men to build up a splendid optical business.

Mr. Smith, manager of the Chicago office of the Geneva Optical Co., reports business excellent, this months' trade being nearly double that of the same month last year.

The firm of Wendell & Co., 63 to 69 Washington street, has just added to their business a lapidary department, equipped with the latest and most improved machinery. The business of this firm deserves special mention, as it is different from any other jewelry manufacturing concern in the country. They employ 75 experienced workmen the entire year on special order work and repairing, and have never done any personal soliciting for trade. They do such a large variety of work, that the retail jewelers in all parts of the country find it a great advantage to deal with them. They receive work from the New England, middle and southern states, and almost every reliable jeweler in the western, northwestern and southwestern states is numbered among their customers. A visit to their factory is very interesting as almost everything dealt in by retail jewelers is made or repaired in it, such as diamond mountings, jewelry making and repairing, raised monogram and bangle work, enameling, engraving, stone setting, lapidary work, watch case making and repairing, gold and silver plating, silver flatware making and repairing, gold chain making and renewing, pin repointing, optical repairing, refining, assaying, etc., etc. Strict adherence to their motto "good work, low prices and prompt attention," is the cause which has made their business develop so rapidly. Wendell and company are the proprietors of the Jewelers' School of Letter and Monogram Engraving, which opened early in this year and is already meeting with gratifying success.

The Jeweler's Circular petition as published in the *Evening Post* of April 12, corroborates the ideas and feelings of the diamond importers and dealers generally of this city. F. E. Morse & Son may be quoted as coinciding exactly with the New York dealers. They feel that the legitimate dealers would be subject to the unscrupulous competition of smugglers, and would be obliged to close up or resort to the same practices Observer.



[From our Special Correspondent.]

Boston, April 18, 1890.

In our local market there are no new features of special interest. The general business movement has been somewhat retarded for some weeks by the condition of the money market, which if not actually stringent, has been too close to allow of much freedom of action in enterprising business circles. An early improvement is expected soon, however, and although it has been expected for some time past, yet there are now better reasons for hopeful anticipations. The Western railroad situation is still badly involved, and efforts to form a basis for a restoration of harmony between the roads have thus far failed, thus protracting the uneasy feeling as to the value of stocks.

But the business situation cannot be judged fairly by the conditions as they may happen to exist at any fixed period. The influence of the past is always an element in the situation, and although perhaps it has little recognition, yet it naturally affects the character of trade for better or for worse. It is also well to recognize the fact that the outcome of the future, to affect which many arrangements have been made and upon which the strongest hopes are based, must also have an important influence which will be seen just as soon as the progress of time shall have transmuted the future into the present.

And so, among our local jewelers the general report goes around that, all things considered, the trade is fair, with no cause for complaint in the immediate outlook.

There are certain important factors, however, in the existing condition of things, which our local tradesmen are viewing with more or less of anxious interest.

Prominent among these is the silver question, which now bids fair to result in a considerable inflation of the currency of the country, even if it does not add to its wealth. The ordinary effect of currency inflation is too well known to require any more than a bare allusion to it here. Any large increase in the circulating medium, directly tends to advance prices, or, to put it in another way, to cheapen the value of currency itself. The higher prices obtained

through such means naturally works to the advantage of those who have commodities or other property to sell, but their increased prosperity is at the expense of those who have to buy. In other words it is a debatable question whether there is much to be gained by an advance in prices, if the currency received is for practical use, divested of a corresponding amount of its purchasing power.

Another cloud which is beginning to darken the business situation, is the uneasiness of labor, which threatens to bring on a costly conflict between the employer and the employed.

In our local trade circles, the bright weather has quickened the retail trade, and jobbers are doing a fair business in seasonable wares. Iron is dull but rather steadier.

George H. Richards, Jr., is now on the Pacific coast. He has been through Mexico and Southern California and is to visit Portland, Seattle, Denver and other leading western cities before his return to Boston. He reports trade there quiet.

For gentlemen, a novelty just brought out by Percival & Co., is a pony chain of silk and silver—very neat. A pretty Victoria chain for the ladies, of black or red silk and gold, with gold conventional acorn cup and bale pendant, is shown.

George H. Whitford of J. N. Lindsay & Co., is in Europe with his wife, daughter and niece. They will remain abroad until the middle of August and visit the principal cities of the continent.

At Shreve, Crump & Low's a recent addition to the many charming things for the ladies to wear in laces and the hair, is a line of dainty flower pins, which go well with the profusion of flowers the milliners have introduced this season. A handsome back comb topped with solid gold pierced work, is also new this spring. The heart ornaments continue in favor, although not as popular here as in New York. Boston women say they are just a trifle too sentimental for women who are not engaged. Double hearts in outline with pearl settings, and beautiful moonstone hearts are shown with very pretty borderings of gold, diamonds and turquoises.

Boston dealers expect great things of Reed & Barton's latest department. The firm's venture into the solid silver line of goods promises well, and I am informed by one of the leading handlers of the concern's ware, that the new goods will shortly be on the market here.

Mr. Southworth of the firm of D. C. Percival & Co., is south on a flying pleasure trip.

M. Carlton & Co., have been petitioned into insolvency.

J. H. Carter of San Diego, Cal., formerly of Newburyport, now greets his friends at Joseph Moulton's, having returned east to take up his residence in Newburyport once more.

The firm of Floyd, Pratt & Rounds becomes Floyd, Pratt & Co, by the retirement of Mr. Rounds, who, after a successful partnership of ten years duration, goes out of the jewelry business entirely and will hereafter devote himself to other investments, in which he has become interested, in the electrical line.

Daniel B. Spear of Henry T. Spear & Co., has returned, improved in health, from Saratoga, where he spent the winter.

Mr. Flanders, formerly on the road for D. C. Percival & Co., is now with Floyd, Pratt & Co.

At the Waltham works of the American Watch Company, Mayor Fisher's place as the foreman of the escapement department is filled by Mr. Byam, who has been "moved up."

The new Waltham silver watches, hunting and open face, just put on the market by the American Company, have been transformed into a very attractive novelty by Geo. H. Richards, Jr., & Co., who have brought out a complete line in beautifully etched and repoussé oxidized cases.

The number of patents issued at Washington last year was greater than has ever before been reported, the total number granted being 23,360. Fifty-three years ago the total number issued was 109, and from that time, down to the present, there has been an increase each year in the number of patents issued, as compared with the preceeding twelve months.



[From our Special Correspondent.]

Providnce, R. I., April 20, 1890.

The manufacturing jewelers of this city are taking a more philosophical view of the recent dullness in trade and hope for an encouraging reaction within a fortnight. They attribute the recent depression, chiefly to the unseasonable weather in the west, producing bad roads and preventing country cousins from getting into town to make their purchases. But the more protracted the lull they say, the more relieved must be the market and greater will be the desire, if not demand, for new and unique designs. Very recently there has been considerable discussion about a consolidation of the jewelry industry in its various branches, and while it could not be conducted on the same plan as a woolen goods mill, yet some credence, not to say assurance, is given to the feasibility of its accomplishment. The concentration of the business and the introduction of new and improved machinery, have already brought about a reduction in price, while the increasing demand for better products gives evidence of a promising condition of trade. Local jewelers say that could the South American field be opened up, a brisk boom would quickly be experienced. There is at present some Providence jewelry exported to a few South American parties, and that class of trade is constantly increasing. If better transportation facilities were afforded, not jewelry alone, but other local products would be exported. One prominent city manufacturer of jewelry expresses the belief that he could double his present annual shipments of more than $7,000 to Brazil and the Argentine Republic if reciprocal trade relations with the United States were brought about.

Business has increased so rapidly of late at the Nicholson File Company's works, that a new building is to be erected to accommodate extra forges that will be put in as soon as possible. This building will be 250 feet long and 40 feet wide, and an artesian well now being sunk, will supply it with water. The works will then give employment to about 600 hands. The present fortnightly pay roll of $8,000 will be necessarily increased. The present works are the largest of their kind in the country, and, besides manufacturing a mammoth quantity of usual grades and sizes, they now turn out files which formerly were made only in France and Switzerland.

There is on exhibition in the window of Tilden, Thurber & Company, some of the most unique specimens of silver work probably ever produced in America. They consist of an apple, pear and a rose, which were plucked from the native stems and incrusted by a process which is kept a profound secret by J. J. Healey of Mathewson street, this city, who did the work. Henry Tilden, who makes annual visits to Europe, says that similar goods caused quite a craze in France three years ago, and the oxydization of natural flowers was very profitable, for floral offerings or fruits once put carefully through the process are imperishable and highly prized as mementoes. Lovers of art in Providence and Rhode Island should feel pleased, if not proud of a local workman's achievements.

What promises to be an interesting and very sensational suit, is that brought against George H. Fuller, of the well-known firm of George H. Fuller & Son, manufacturers of jewelers' findings at Pawtucket, for the recovery of $10,000 damages for slander, brought by George T. Palmer. The case is set down for trial at the June term of the Court of Common Pleas, to be held in this city the first Monday in June. Palmer was formerly, and for several years, a bookkeeper for Fuller & Son, but last July he severed his connection therewith, and a few days later Fuller entered a complaint at police headquarters of alleged crookedness on the part of Palmer. Fuller,

in company with a police officer, visited Palmer's residence with a search-warrant in quest of a quantity of silver, which it was claimed had been stolen from the shop of the concern. The Palmer domicile, however, was not searched, notwithstanding that both Mr. and Mrs. Palmer repeatedly urged the officer to do his duty. The latter however, acting under orders from Fuller, left without making the search. Another charge made by Fuller is that Palmer's books were in bad shape and that his accounts were several hundred dollars short. Palmer bases his charge for damages on the ground that Fuller's actions and words have been such as to injure his reputation and have had the effect of preventing him from obtaining employment, compelling him not only to remain idle the greater part of the time since leaving Fuller's employ, but also placing him in such a position as to be unable to secure a situation for the present and coming season.

W. K. Blackinton of Attleboro, has just produced a new design scarf pin, which is attracting much attention.

George Bloodgood, one of the best jewelry workers Attleboro ever had—in fact, an old-timer—is now permanently located in New York. He was in Providence during the week and called upon friends and acquaintances.

H. A. Bliss, connected with the Gorham Manufacturing Company's store, New York, spent more than a week in this city recently familiarizing himself with local business.

The firm of Bailey & Fuller, 147 Summer street, has been dissolved.

Read & Lincoln of Attleboro, are about to remove to this city as soon as a suitable site can be obtained.

Several of the shops in this city and Attleboro are on short time, it being estimated that fully 50 per cent. of the hands are out of employment.

Adam Dewsnap and John E. Leonard have commenced business at 195 Eddy street, under the firm name of Dewsnap & Leonard. Both gentlemen have had considerable experience and will manufacture a line of plated goods.

M. T. Quimby & Co., of Boston, by whose failure some months ago the manufacturers of this city were interested for some $1000, have at last effected a settlement at forty-two cents.

The Burdon Seamless Wire Company are so crowded by large orders, that extensive additions and improvements are soon to be made in its already large plant on Summer street.

Mr. and Mrs. Benjamin Lederer are receiving the congratulations of their many friends and acquaintances, upon the recent addition to their family circle of a son.

The petition to the Legislature by Howard & Son for incorporation, will be heard at the May session.

The Manufacturing Jewelers' Board of Trade now has a membership of 126.

Several of the members of the Board of Aldermen wear handsome badges showing the symbols of the Board in gold or blue enamel, in the center, with "Board of Aldermen, Providence, R. I.," in black on gold around the edge. They were made by Charles A. Russell & Co.

A. Dewsnap has withdrawn from the firm of W. S. Godfrey & Co., Mr. Godfrey continuing under the old name.

B. E. Daggett & Co., are showing a new line of plated rings that are about as "nobby" as it is possible to find anywhere in the trade.

Barstow & Williams have removed from 29 Point street to 14 Fountain street.

Samuel H. Bailey of Foster & Bailey, has been elected one of the directors of the Young Men's Christian Association for the ensuing year.

L. Goldstein has commenced business at 81 Friendship street.

Hiram Howard of Howard & Son, is having a new yacht built on which he contemplates whiling away many an enjoyable hour during the coming summer.

One of the new firms to commence business in this city during the past month, was that of Harrington & White at 129 Eddy street.

S. Hutchins will remove from 227 Eddy to 27 Eddy, about the first of next month.

The demand for the "Acme" and "Eiffel" buttons has become so great, that the manufacturers, Fred. I. Marcy & Co., are working their entire force full time.

Frank T. Pearce & Co 's shop is one of the busiest in the city and the daily production of pens and pencils is something wonderful.

Walker Wood of Wood, Bicknall & Potter, has started on his annual trip to Europe in quest of novelties.

The selling out of the stock and machinery of John A. McCloy, closes up another of the old established jewelers of this city.

Crossin & Tucker is one of the very few firms which employs its help full time the year round. At present they employ about forty men and are pushed with orders, and have work enough on hand to keep busy for some time.

J. Briggs & Sons have applied to the General Assembly for a charter of incorporation as the J. B. Briggs & Sons Company. This firm is one of the oldest plating concerns in the country, having commenced business in 1849.

William H. Richmond of Richmond & Co., this city, has recently acquired by purchase, the famous Hotel Flower, at Boston, the property covering an area of about 1,100 square feet and costing $375,000. In addition to this he has purchased 613,000 square feet of land in this city, which is to be used for business purposes.

Being the only manufacturers in the world of the seamless filled gold chains, Kent & Stanley are driven to their full capacity to keep up with the constantly increasing demand which the recognized superiority of their goods is producing.

William E. Spofford has admitted his son to partnership in his business.

The Providence office of Cottier & Son, of New York, has been removed to 87 Weybosset street.

At the state election this month Hiram Howard, of Howard & Son and the Sterling Co., was elected representative by a majority of 161, the largest majority received by any democrat on the ticket.

CINCINNATI

[From Our Special Correspondent.]

Cincinnati, April 19, 1860.

The trade, both wholesale and retail, has been quite active for the season since the beginning of the year, most of the jewelrs reporting sales ahead of the same period last year.

There seems to have been an unusual demand this spring for silver-ware, both plated and solid, so say Duhme & Co., who probably, are the largest manufacturers of solid silver-ware in the west. They also carry large lines of other manufacturers, and, therefore have an excellent and varied stock to select from. Their business, both wholesale and retail, has been good all the season. For a swell wedding that occurred this month, they furnished about $10,000 of the presents. Of course, other jewelers came in for their share, contributing more or less, so that it swelled the amount to several thousand more. The jewelers would like this thing kept up right along.

Oskamp, Nolting & Co., report a good jobbing trade. They are about to issue a new mammoth catalogue, containing about 500 pages, finely illustrated with watches, diamonds, clocks, jewelry, optical goods, etc., everything carefully selected from the stocks of hundreds of manufacturers, with a view of enabling the retailer to see at a glance the most salable goods that are now manufactured

This firm has a kindly feeling toward THE CIRCULAR, and well they may for through it they have lately received some handsome orders from remote parts of the world. One order came from Allahabad, India and another from Balize, British Honduras.

The John Holland Gold Pen Co., have just added some new machinery to their already extensive factory, increasing largely their facilities. They report their business as being first-class. They are having a great demand for their fountain pens, which seem to be a great favorite among the trade generally, and the demand is constantly increasing. They are also introducing a new factor to their business, that is iridium plating, which is just now in its infancy but promises to be a branch of their business of great magnitude in the near future. Mr. Holland is the inventor, and at present the only manfacturer. It gives a beautiful silver finish, is hard, durable and will never tarnish. It will doubtless take the place of silver-plating in many ways.

Jos. Noterman & Co., manufacturing jewelers and diamond setters, report an excellent business thus far this spring. Mr. Noterman is probably the oldest manufacturer of jewelry in the city. He came here in 1848, and has been active and successful in the business ever since. Honesty and square dealing are his motto, and in adhering to this motto he has won the confidence of the trade everywhere

Jonas, Dorst & Co., manufacturing jewelers, report a good business. They have two men on the road, Geo. F. Black and Hugo Jonas, who have been quite successful. They have just finished remodeling and beautifying their office and factory, so that it is now complete in all its appointments.

The American Jewelry Co., are closing out their business at auction. J. H. French, the well-known auctioneer, swings the hammer.

E. & J. Schweikert, dealers in tools and materials, will soon have a new catalogue to send to the trade, which for completeness and general get up, will probably surpass any catalogue of the kind yet published.

A Novelty in Advertising.

THE Wm. Rogers Mfg. Co., Hartford, Conn., are distributing a novel advertisement to the jewelry trade. It is a game called "Rundo, or Around the World," and consists of a large lithographic card on which are portrayed by means of colored spaces, each representing 1,000 miles, the cities on the transcontinental route around the globe. The longitude and time of each of these cities is given, and flags indicate the nations governing the different countries through which the route passes. The game is played by means of a tetotum and small movers, one for each person participating. Any convenient number of persons can play. The first player getting 1 on the dice or tetotum, starts at Chicago. In succeeding throws the marker is moved forward the number of stations indicated on the tetotum. If the marker falls on Nos. 4, 8 and 22, the player returns to the starting point. If it falls on Nos. 10, 14, or 19, he loses his throw. Should the marker fall on the space occupied by another player, such player is thrown off and must start anew. The winner is the one to reach New York FIRST. At the top of the card appears the well-known trade mark of the company, while within the transcontinental circle is a sunburst with clouds in the foreground, the American flag floating triumphantly above it all. The Wm. Rogers Mfg. Co. will be glad to send this amusing game to any jeweler who will apply for it, stating that he saw this notice in THE CIRCULAR.

—Albert Call, Santa Fé, N. M., has been appointed by the Department of the Interior to collect for the census office, statistics relating to the mining of precious stones found in Arizona and New Mexico.

Obituary.

ISAAC A. ALLING.

When it became known in the trade, on April 10, that Isaac A. Alling had died at 11:30 o'clock in the morning of that day, many were the expressions of regret heard from all sides. He was the oldest manufacturing jeweler in Newark, N. J., and during his lengthy career he had made numerous friends, while the straightforward principles that had governed his business for forty-eight years, had gained for him the respect of the trade at large. His death was entirely unexpected.

Mr. Alling was born in the Alling homestead in Newark, N. J., on February 17, 1814, and was thus in his seventy-seventh year at the time of his death. He received a liberal education, and on attaining a suitable age learned the trade of fancy silver plating. After four years he embarked in the jewelry business with his brother, Stephen B. Alling. At the end of five years he formed with his brother, Joseph C. Alling, the firm of Isaac A. & J. C. Alling, for the manufacture of jewelry. In 1850 Horace Alling, another brother, was admitted to the firm, and in 1859 William R. Alling was admitted, the firm becoming Alling Brothers & Co. In 1881 Isaac A. Alling retired and the firm name was changed to Alling & Co, and so continues at this time being composed of William R. Alling and Frank Welch. Horace Alling retired with a competency in 1886, after thirty-six years.

On August 15, 1881, Isaac A. Alling with James S. Holmes and Thomas B. Cleveland, organized the firm of Isaac A. Alling & Co., and established a factory at 50 Walnut street, Newark. Messrs. Holmes and Cleveland subsequently retired from the firm, and A. Alling Reeves, a nephew of Isaac A. Alling, was taken into partnership. Until his retirement in January, 1889, Mr. Alling devoted strict attention to his business. Then he turned it over to A. Alling Reeves, who now conducts it.

In politics Mr. Alling was a Whig, and subsequently a Republican. He was one of the incorporators of the Essex County National Bank of Newark, and was a director until his death; he held also a similar office in the Newark Fire Insurance Company. He was a prominent figure in religious circles, and his charities were many though but little known. He became a member of the Third Presbyterian Church in 1832, and for many years had been an elder. In 1837 the deceased married Miss Emeline Moore of New York, who died about three years ago, leaving no children. Less than a year ago he married Miss Julia Chevalier, who survives him. It is said that Mr. Alling's fortune is nearly $500,000.

The funeral was held on the 14th from his late residence at 37 Walnut street. Rev. Drs. Hollifield Craven and Hopwood officiated. Many manufacturing jewelers of Newark, representatives of the trade from New York and scores of personal friends were present.

WILLIAM S. HICKS.

William S. Hicks, the oldest manufacturer of gold pens in America, died from pneumonia, on April 4. On the Friday previous, he left his factory in his usual robust health, but the next norning complained of pains in his side. Doctors being summoned, discovered symptoms of pneumonia, and ordered Mr. Hicks to keep his bed.

The deceased was born in New York in 1818, his parents being descendants of the early settlers on Manhattan Island. He served the required seven years apprenticeship of this trade, and became a thoroughly practical mechanic. In 1848 he embarked in business on his own account on Beekman street; from this place he shortly afterward moved to the corner of Broome and Elm streets, and in 1852 to 20 Maiden Lane, where he remained until 1887, when he moved his business to his present address, 235 Greenwich street. During this long career he always considered himself a workman, and day after day would find him at the bench clad as an ordinary artisan. Work to him was as necessary as air, and his success in

business can well be attributed to his personal efforts. Nothing had greater attraction for him than his factory, and he was wrapt up heart and soul in it. An inventor of considerable ability, he perfected from six to ten patents which have proved extremely valuable. In 1861 he established a branch office in London.

Mr. Hicks was one of New York's exempt firemen, having served as a volunteer for many years. He was also a member of the Atlantic Lodge No. 178, F. and A. M., and of the Mechanics' and Tradesmens' Society of New York. He was regarded by his numerous friends as a man of exemplary habits, and of a modest and retiring disposition. He leaves two sons and two daughters, the former being in the business.

The funeral was held from his late residence, 323 West Fifty-first street, the remains being taken to Greenwood cemetery. The employees in the deceased's factory attended in a body.

CHARLES D. YALE.

Ex-Senator Charles D. Yale, died at his home in Wallingford, Conn., on the afternoon of March 30, after an illness of many weeks. He was 80 years of age, and one of the best known men in the state. He was for seventeen years one of the principal stockholders and the treasurer of Simpson, Hall, Miller & Co. He was the oldest Free Mason in Connecticut, having been admitted to Compass Lodge in 1832.

Over fifty years ago the deceased moved to Virginia, and for more than thirty years resided in Petersburg and Richmond, where he amassed a large fortune. After returning North he lived in New Haven, but returned to Wallingford in 1870. He was a life long Democrat and in the years 1874 and 1878 represented Wallingford in the Legislature with much credit. In 1875, 1883 and 1884 he was elected Senator from the Sixth district and served with distinction. For five years he was warden of the borough. He was born in Yalesville, the thriving village which derived its name from his father. He leaves two sons, Charles B. and Selden, who have for several years been connected with their father's business, and at one time were in charge of Simpson, Hall. Miller & Co.'s New York store.

BENJAMIN A. HERSEY.

Benjamin A. Hersey of Boston, Mass., well-known in the trade as manufacturer of Masonic jewelry, died at his home in Medford, on April 1. The deceased was born in the quaint village of Hingham, Mass., and had resided in Medford for thirty years, holding, among other offices, those of selectman and assessor. He was 62 years of age at the time of his death.

Mr. Hersey was a prominent Mason, and one or the most active members of the Mt. Hernon Lodge. He leaves a widow and four children.

American Jewelry Abroad.

Thousands of dollars worth of American novelties in jewelry were sent to Paris at the opening of the French Exposition, which met with ready sales among the Parisians. The goods consisted chiefly of cheap novelties in plated-ware that many of the New York manufacturers had specially manufactured for the Exposition trade. After the Exposition closed the goods left over were shipped on to London, and a typical American jewelry store was opened by a New York house. The venture proved quite successful, and the firm are now doing a larger foreign than domestic trade in American wares, which goes to show that England is losing her prestige in this class of goods.



NEW LENS MEASURE.

We here illustrate a novel device for measuring the focal power of lenses for the use of oculists and opticians. Instead of focusing the rays of light by refraction as with all other devices, this instrument takes the curvature of the lens and registers on the dial the refractive power of a glass automatically. All who have been handling spectacles and eyeglasses know the difficulty and annoyance in focusing lenses in the old fashioned way or by any of the focimeters heretofore offered to the trade, either the light is not right or for some other reason it is usually a bothersome part of the optical trade



to ascertain the power of a lens, and especially is this true of cylindrical and compound lenses. With this little instrument shown above there is no difficulty whatever, and it is as easy to measure a compound as a simple spherical lens. We have been permitted to use this cut to illustrate the subject in advance of its being placed upon the mraket or advertised, but we understand the instruments will be ready for distribution now within a few days. The cut will show with little explanation the method of using the instrument. Simply press the face of the lens on the three points as shown and the focal power is registered on the dial. It is patented and will be offered for sale by the Geneva Optical Co., 23 Washington street, Chicago.

WATCHMAKER'S STAKING AND PUNCHING TOOL.

From the description given below of a watchmaker's staking and punching tool, patented April 15, by Edward Rivett, of Boston, Mass., the well-known inventor of the Rivett Lathe and other tools, it will readily be seen that the device contains many points of advantage.

Figure 1 represents a perspective view of the improved tool. Fig. 2 represents a top view; and fig. 3 a cross-section on the line X X, shown in fig. 2. *a* is the base, having the goose-neck frame terminating as a vertical hollow cylinder or tool-guide adapted to receive the punch or stake as is common in devices of this kind. C is a perforated bed-plate resting on top of the base and provided with a series of perforations of varying diameters, each coinciding with the posit-

on of the punch or stake when the bed-plate is rotated around its axis. The plate C is pivoted on the vertical pin *d*, (fig. 2) which passes through a vertical perforation of the base and is provided in its upper end with a head *d'*, resting, preferably, in a recess in the top of the plate C, as shown, The lower end *d''* of the pin *d* is reduced in diameter and terminates as a head or collar.

In connection with the perforated plate and pin the inventor uses an adjustable locking device for the purpose of securing plate *a* to the base after it has been adjusted to the stake. This locking device consists of a pivoted lever *e*, connected in one end to the pin *d*, and provided in its other end with a screw passing loosely through a vertical perforation in the base, and having its lower end screwed in a perforation in the lever, (see fig. 3). f^1 is a serrated head at the upper end of the screw, which bears against the top of the base.

a^3 is a fulcrum on the under side of the base, against which the lever *e* is brought to bear when the clamping-screw is tightened. It will thus be seen that by loosening the screw, the downward pressure on the pin *d* is relieved, allowing the perforated plate to be adjusted for the purpose of bringing any one of its perforations centrally below the punch or stake, after which the plate is firmly secured in such position against the top of the base by simply tightening the clamping-screw.

In combination with the staking-tool, a punching device for the purpose of perforating mainsprings for watches may be used ; it is

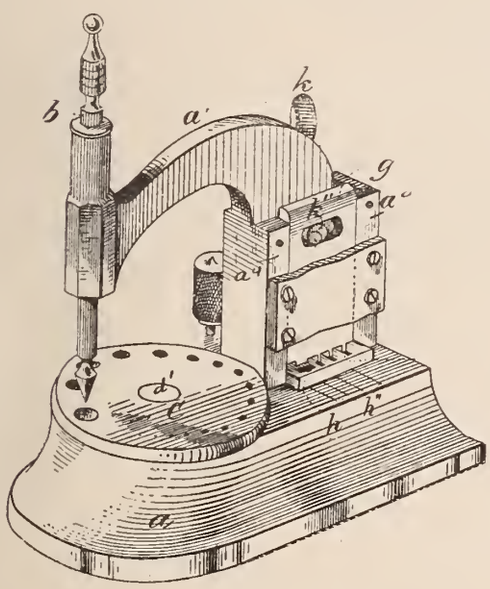


FIG. 1.

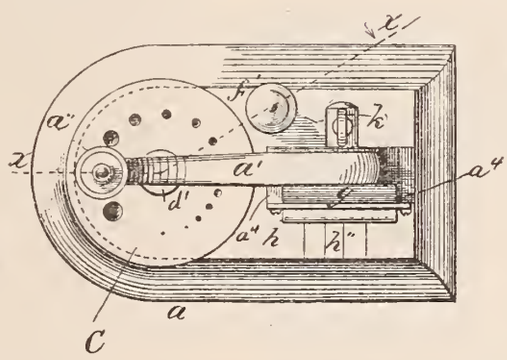


FIG. 2.

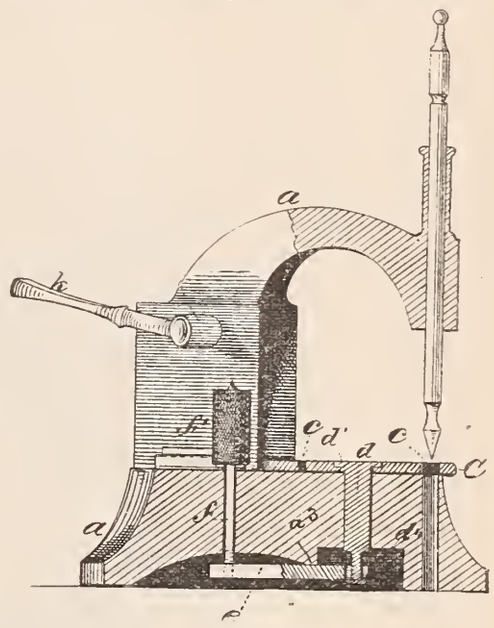


FIG. 3.

constructed as follows : In suitable guides a^4 a^4 on the goose-neck frame is vertically movable the plunger *g*, having a series of punches in its lower end. Below these punches is secured to the top of base a die-plate *h*, having vertical perforations corresponding to the punches, (see fig. 1). The plunger is moved up and down by means of a hand-lever *k*, secured to a horizontal shaft journaled in the goose neck, and having secured to it a cam or eccentric *k''*, working in a slot in the plunger.

When the staking-tool is not provided with the punching device, lever *e* is arranged centrally below the goose-neck frame and the serrated knob or head *f'* of the clamping-screw *f* is located in a cut-away portion of the goose-neck frame.

Each part is made in the most thorough manner and fully warranted. The frame is of solid iron, symmetrically shaped and handsomely finished, and will receive a blow on the stake without the slightest vibration. The die is 1½ inches in diameter, and is held firmly in place by simply turning the knurll nut with the forefinger and thumb.

—F. Duncan, M. D, oculist, of Des Moines, Ia., has moved his office from 507 Walnut street, to 311 West 5th street.



Proceedings of the Watchmakers' and Jewelers' Union.

[NOTICE.—We shall be pleased to receive and discuss descriptions of new tools, attachments and improvements in any branch of our trade, and publish them free of charge ; also inquiries for those desiring information on any point of general interest. Communications should be written as concisely as possible consistently with clearness, on only one side of the paper, and be received here by the 10th day of the month, in order to be discussed at our meeting for that month and inserted in the next issue of THE CIRCULAR. Address them to "Secretary of the W. & J. U., care of THE JEWELERS' CIRCULAR, 189 Broadway, New York." For full information for correspondents, see our Proceedings in THE CIRCULAR for October, 1889.]

Seventh Meeting.—Reported by the Secretary.

The regular April meeting of the Watchmakers' and Jewelers' Union was of unusual interest, the Secretary having been in receipt of a number of communications on various topics, which were fully discussed by those present. The first letter presented was as follows :

TO REMOVE THE STAFF FROM AN ELGIN WHEEL.

Albany, N. Y., April 10th, 1890.

Secretary of the W. & J. U.:

I have asked some watch repairers how to remove the staff from an Elgin 3rd or 4th wheel. "Drive it out." Well, I did, and out with it came a small nut which was screwed into the wheel, so of course ruined threads on nut and wheel. Now I want to know how to remove the staff from these small nuts and not injure threads on nut or wheel. Truly Yours, "28."

MR. UHRMACHER rose immediately to enlighten the inquirer. He said in substance that in order to remove the staff from any wheel of an American watch, "Elgin" or other, it is necessary to remove the wheel with the hub attached, as the wheels are hubbed before being trued up in the round, and the trueing up is done by boring out the hub of the wheel, after which the wheel is driven on the staff, hub and all. It is therefore obvious, he continued, that when a wheel is to be removed from the staff, hub and all will have to be removed and in driving out the staff, the hub is the point on which it has to rest and not the wheel. A suitable rest would have to be

provided, which is not always easy, as these hubs are sometimes in the shape of a cone. In such a case, drill a hole in a strip of brass of the diameter of the staff, countersink the same to conform to the shape of the hub, make a saw-cut edgewise to admit the staff, place the hub in the countersink, and with a punch fitting the chamber of the staff drive the staff from the hub, leaving the wheel and hub in one.

A general discussion followed, but all agreed that MR. UHRMACHER had covered the ground satisfactorily and nothing could be added.

This question being satisfactorily disposed of, the Secretary offered another nut to crack, which, however, seemed to be easily disposed of. It was the brief communication appended:

Kokomo, Ind., April 10, 1889.

Secretary of the W. & J. U.:

I have an old-fashioned Verge watch to repair, and I am sorely puzzled what to do with it. It has a good motion, but on being carried it will overbank. I have made numerous efforts to correct the evil, but it will either bank or overbank. What can I do to cure the evil? J. L.

MR. ELECTRODE thought that in all probability the pallets of the verge in the watch spoken of had not the proper angle, probably not more than 90°, whereas the pallets should be at an angle of 95° or 100° with each other, the advantage of the greater angle being to lessen the recoil and give a larger vibration to the balance, without overbanking, and thus to obtain the best time of the verge escapement.

MR. UHRMACHER said that defects of the kind existing in the escapement of the watch to which the correspondent referred used to be quite common, and to remedy it he employed the following means: He prepared a holder, made of steel or brass wire, at the extreme end of which he cut a slot to hold one pallet of the verge in a rigid position. The pallet to be held in this tool should be the one nearest the balance; next, he took a piece of brass wire about an inch long and of a thickness equal to the length of the lower pallet of the verge, slotted one end of this piece of wire suitable to receive the lower pallet, and inserted it in this slot. The first holder mentioned should hold the upper pallet of the verge in such a position, that the piece of brass wire attached to the lower pallet will form, by its length, a lever weight, having a tendency to open the angle of the pallets of the verge. By means of an alcohol lamp and a blow pipe he then applied a small jet of the blaze to the centre of the staff of the verge, drawing to a blue, under which the brass wire on the lower plate gradually dropped somewhat, and thus opened the angle of the pallets. The operator, he said, has to guard against over. doing the thing, as this may easily happen if the process is continued too long. It stands to reason, that the escape wheel will have to be brought nearer to the verge after the operation, in order to have the escapement again in proper condition.

Two more subjects for discussion remained, and these were then laid before the meeting. The first related to

THE FIRST HOROLOGICAL SCHOOL.

Binghamton, N. Y., April 2, 1890.

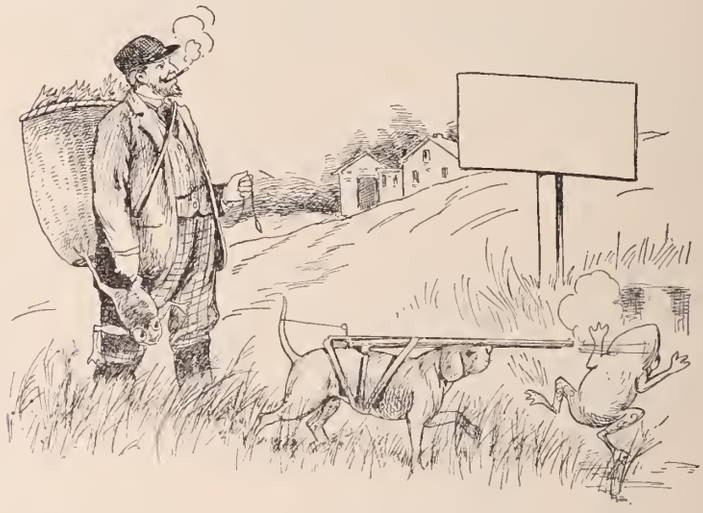
Secretary of the W. & J. U.:

SIR:—Can you give any information as to where the first Horological School was established, as I have had quite a discussion with some one in the trade? H. L. M.

MR. EXAMINER, who had made a special study of this subject, was called upon for an opinion. He stated, that the first horological school was established at Geneva in the year 1826 by the *Society of Arts*. It was turned over to the city authorities in the year 1842, under whose administration it has remained since. It has received very few legacies, but is supported by the municipality at an expenditure of 48,000 francs. Tuition amounts to only 4,000 francs, and a sum of 44,000 francs is yearly paid by the municipality towards its maintenance. The price of tuition is five francs for natives, twenty francs for strangers and children of foreign residents; the latter may at their request obtain a reduction of price. The school at Chaux de Fonds was opened in 1865; in Locle in 1868. The school at St. Imier was opened in 1866; at Bienne in 1871; at Fleurier in 1875; in Glashütte in 1878. The School of Art is at Chaux de Fonds, and was opened in 1872.

The secretary then rose and stated that several of the members had suggested that they vary the discussions occasionally by introducing some such subject as advertising and how to make it profitable, and others that are of equal interest to the retail jeweler and less familiar to him than the ordinary topics of watch repairing. One of the members, MR. STILUS, he said, had offered a comic illustration for an advertisement with the request that he exhibit it to the members. The design, which is here reproduced, was passed around among those present and elicited much favorable comment. The sign post would give space for the advertiser's card, and all thought it would make a very attractive cut for use on a card or in a newspaper by a jeweler handling sporting goods.

MR. O'PINION said he thought the humor of the picture could be very well carried out by putting a patent specification something like this, below it:—



NEW AND INGENIOUS READY ACTING DOG TAIL AND GUN BARREL ATTACHMENT FOR SPORTING PURPOSES.

Inventor's Patent Specifications.—I claim the dog's tail, the extra-sized trigger guard, also the combination of trigger and dog's tail, also the whole dog, and the general application in the manner substantially and for the purpose described,

This pleased the members hugely and MR. STILUS was requested to employ his talents in devising other comic cuts or advertising ideas for his brethren of the craft.

MR. EXPERT rose at once after the reading of the next communication by the Secretary, which might be headed appropriately

WHAT'S IN A NAME?

Atlanta, Ga., April 3, 1890.

Secretary of the W. & J. U.:

Why is the balance spring frequently called the hair spring? L. A. L.

In order to discover what was in these names MR. EXPERT dipped into history a little. He said: The first pocket watches were made—so says the best authority—in the fifteenth century. The escapement used was the verge escapement: and, although the verge escapement will go without a balance spring, it will keep but poor time and run very irregularly without a balance spring. The necessity of something fulfilling the functions of a balance spring was, therefore, soon recognized. The early watchmakers were equal to the emergency. They attached a bristle to a movable lever, against which (the bristle) the balance banked; for this purpose the balances were made with two arms, which alternately banked against the bristle. In order to regulate the watch, the bristle by means of the lever, was moved to and from the center of gyration, and in this crude manner the watch was regulated, until Robert Hooke, in the year 1658, invented the spiral balance spring made of steel.

The proceedings were then brought to a close by a motion to adjourn.

PARIS GOSSIP.

[From Our Special Correspondent.]

PLEASURES AND PROFITS OF EASTERTIDE.—BIJOUTIERS "STRIKE FOR HONEST FAME."—NEW ALARUM WATCH.—SALE OF THE MARQUIS COLLECTION AT THE HOTEL DROUOT.—HARMFULNESS OF AUCTION SALES.

Paris April, 5, 1890.

I am pleased to state that business has been much better during the last few weeks, and there is every reason to believe that it will gradually increase. The splendid weather which we are enjoying just now, warms up the people, and gives them that cheerfulness of spirits which is calculated to make them more liberal. Foreigners who have been accustomed to spend Eastertide in Paris, are flocking to the French capital, and everything for the present, looks very bright overhere.

JEWELERS' "STRIKE FOR HONEST FAME."

I must say that our manufacturing jewelers have endeavored lately to make the most of their experience and ingenuity. In all quarters of Paris, jewelry shops exhibit articles of taste; and (strange to say) I have noticed a great deal more variety among small specimens of the goldsmith's art than in sets consisting of combinations of stones. *Bijoutiers* seem to be bent upon taking their revenge upon the *Joailliers*. If the former do not entirely banish gems from their work, they make use of them very sparingly; just enough to falsify the old accusation of exclusiveness. They freely acknowledge that stones must be used sometimes to enhance the effect of an article of adornment, but in many places they replace them by skillful coloring of the metal. Our goldsmith-jewelers now obtain wonderful results with pierced work, repoussè, chasing and enamel. A repercè background gives a remarkable lightness to the most elaborate design; and the association of enamel with chased colored gold tastefully managed is most satisfactory, especially in the center piece of a brooch or a bracelet. Yet it is indispensable to introduce stones into articles of jewelry intended to be worn in a large ball-room or at the opera, as these alone give a fine effect at a distance. This may be after all the reason why our bijoutiers condescend to use them.

EFFORTS TO REVIVE SILVER JEWELRY.

I have noticed in several shops lumpy silver watches, whose back case is a powder box with a tiny puff in it. I also remarked large medals, whose top part slides to disclose a mirror. Energetic efforts are being made to revive silver jewelry. Unfortunately the stamped work exhibited in that line is often very rough. Oxidized silver bracelets, recently made, consist as a rule of a band showing a renaissance ornamental wreath on a pierced background, backed with a piece of silver covered with fine hammer marks.

SOME PIECES FROM THE MARQUIS COLLECTION.

The Marquis collection, an important collection of artistic works of various kinds, was sold at the Hotel Drouot, a few weeks ago, and fetched 913,170 francs, altogether. Among the items likely to interest your readers I noticed: a silver hanap in the shape of a helmet (upside down,) cast and chased, belonging to the Louis Quatorze period, with arms engraved on it. The ornaments of it, introducing female masks, come out in relief on amati, which means a rugged, unpolished background, often done to set off interlacings in gold and silver works at the beginning of the last century. The handle is gracefully curled. This piece was sold at 1,295 francs—a guild's cup in silver gilt, repoussè, with caryatids, ornaments and arms, being a German work of the sixteenth century, went up to 2,125 francs. Two drageoirs (comfit dishes) in cast and chased silver with horses rearing up like those of Coustou, and rectangular stands in red porphyry, with silver mouldings, only reached 1,120 francs. A silver toilet set adorned with fishes and sea-weeds, in relief work gilt on a hammered background was sold for 2.405 francs. Two Louis Seize girandoles in chased silver exhibiting grooves, acanthus' leaves, runs of pearl shaped ornaments and garlands of fruit, marked A. Bouillier, Paris, obtained 6,500 francs. Among the clocks the prettiest has the shape of an ovoid vase in celadon fleuri(flowers on a sea-green background.) It is adorned at the top with a course of godroons, and a wreath of foliage, with an oval opening which partly discloses a silver revolving dial. Two cocks' heads linked with garlands of flowers are formed into handles, etc. This clock 58 centimeters in height, fetched 48,100 francs. No other article in the whole collection attained so high a price.

HOW SALES INJURE BUSINESS.

These sales really do a great deal of harm to business, not only because they attract purchasers who might otherwise buy new goods, but also because they induce silversmiths and clockmakers to copy everlastingly the old styles. The public, seeing that the shops generally exhibit reproductions of ancient works of art, must naturally give the preference to genuine old pieces, even if they have to pay a great deal more for them. The best proof that modern silverwares and clocks may happen to win the fancy even of a collector, if he is above all a man of refined taste, is that we see here and there in collections specimens of modern art; but these, of course, have to be of an original pattern and of faultless workmanship.

NEW ALARUM WATCH.

A new alarum watch called *La Cigale* (the grasshopper) has been brought out by M. Riolet, who merely applied to his purpose an invention, which, is a toy, proved extremely aggravating to sensitive Parisian ears in the course of the year 1876. In the toy *cri-cri* the noise produced was slow and consecutive, whereas in the alarum watch it is shrill and continuous like the grasshopper's singing; which led to that name being adopted for it and to the insect being chased on the case, as seen in fig. 1. The principle is this: a sheet of hammer hardened steel thoroughly plain, whose borders are caught within a frame, has a lever fixed perpendicularly to a point of its surface. The end, *O*, of this lever (fig. 2, No. 1,) is moved, then set free, as a result there will be a vibration from *O'* to *O''* at once conveyed to the steel sheet. The curves *SS' RR'* indicate the



FIG. 1. NEW ALARUM WATCH.

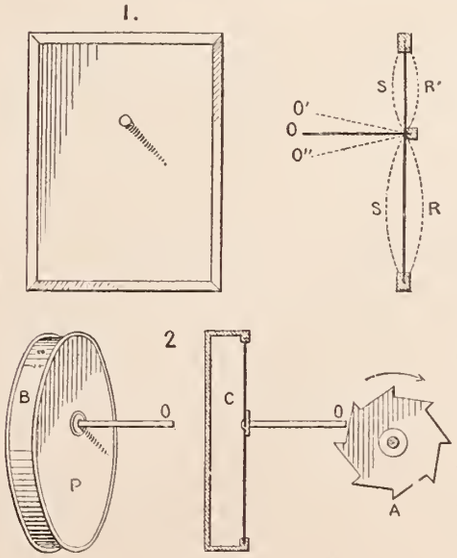


FIG. 2.

quick and alternate motions of the sheet. The sound so obtained is a sharp clap, produced by the sheet in striking the air, which is violently driven away through the energetic action due to the intensity of the molecular tensions thus developed. The loudness of the sound obtained by this means is in proportion to the size and thickness of the metallic sheets employed.

The fig. 2, No. 2, shows the arrangement in this new alarum watch. *B* is the frame or drum in which has been set the hammer-hardened steel sheet *P*, with the lever *O* riveted on it. *C* shows the rivet's head. *A* represents a dented wheel moving in the direction of the arrow, thus acting on the lever's end *O*. When the wheel moves each one of its teeth causes the sheet to vibrate, so that to obtain a maximum of sound (which will be a direct result of the number and quickness of the vibrations), it is necessary to regulate the speed of the wheel *A*.

In mentioning this new invention, *La Nature* casts a rapid glance into the past and repeats several of the old tales (which you must know) about the various contrivances invented to strike the hours, from Ctesibius, and even Plato, up to the present time. This is not the place to examine whether the Duke of Urbino did really possess, in 1542 a ring, the bezel of which contained a watch with striking works in it. I need not say that it is very doubtful. But I cannot resist reproducing here an illustration showing two onion watches of the seventeenth century, represented half-size. The first one exhibits a chased foliage and figures. It was made in France about two hundred and sixty years ago, and contains striking works. The small one, which is not quite so old, is a pretty alarum watch, whose double case decorated with curling ornaments in pierced work is delicately engraved. It was made in London a little more than two centuries ago.

JASEUR.

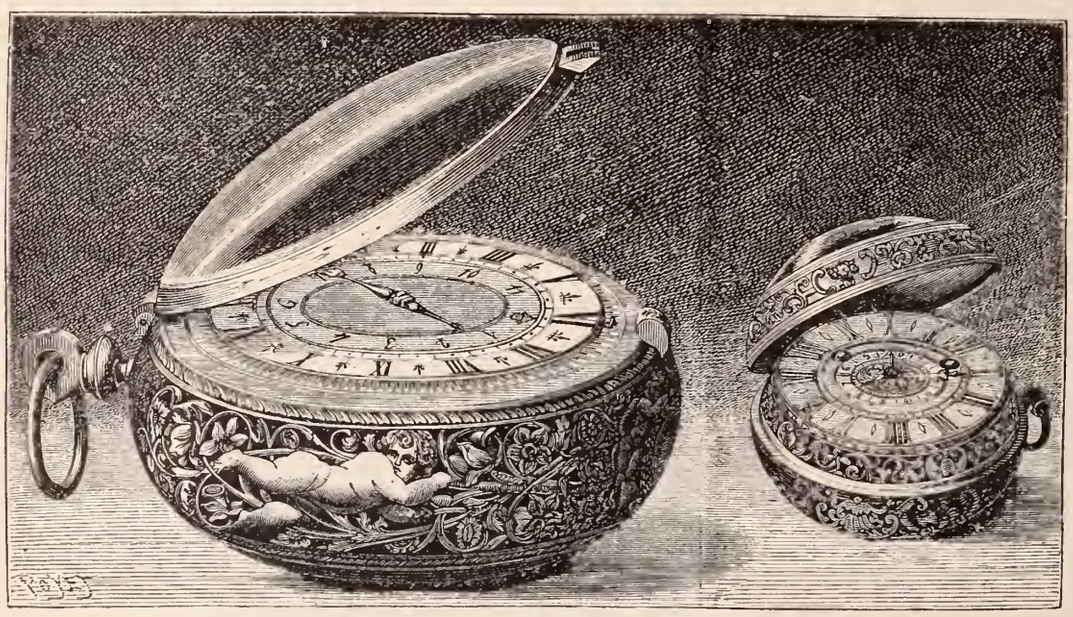


FIG. 3. ALARUM WATCHES OF THE 17TH CENTURY.

A New Industry at Kimberley.

What the Chinamen do on the Australian gold fields the unemployed in the Kimberley district have now found themselves in a position to do. The heap of débris or "tailings" which have accumulated in the neighborhood of the diamond mines have been taken in hand, and a good business is being done in cradling and washing out the diamonds which have been left behind. It is said that many of the people engaged upon this work are making from £10 to £15 a week, and the industry will doubtless be kept up seeing The Kimberly Corporation authorities are doing all they can to assist and encourage it.



[FROM OUR SPECIAL CORRESPONDENT.]

THREATENED STRIKE OF THE COLLIERS.—DISCUSSION OVER THE HALL MARKS ACT.—WHAT LONDONERS THINK OF OUR GREAT WORLD'S FAIR FOR 1892.—A REMARKABLE PAPER ON THE STATE OF THE BRITISH WATCH INDUSTRY.

LONDON, April 12, 1890.

As your readers are aware the whole trade of our country has been recently upset by a threatened strike of the colliers—at a time when every industry is more or less depressed by the irregularities, present or anticipated, in the supply of fuel, it is only natural that our trade also should show some falling off. It is proverbial that both wholesale and retail dealers in jewelry are difficult to satisfy in the matter of trade, but I really do not see any reason for complaining just now. Some of our people appear to have expected the Christmas and New Year's trade to continue. I cannot account for their complaints in any other way. I am sure that if they will only wait they will find the year's trade average very well. Perhaps, there has been a mistake in some quarters where shopkeepers have overstocked themselves; the result of this is that they are not now placing orders as they would have done if they had bought more cautiously before. There is one satisfactory feature of our trade to be noted. While the whole country has been upset with strikes which have been either in operation or in contemplation in nearly every industry, the work-people of our trade have shown their superior sense in abstaining from those most useless of all methods for settling disputes. I hope that the good feeling which appears to exist between the employers and employed amongst jewelers will long continue.

Several subjects of great importance are just now freely discussed—there is our stock subject of Hall-Marking. The laws under which our assay offices work are mysterious and peculiar—if we judge from their application. The "voluntary" system of marking gold and silver goods is only of recent origin. It is only within the last few years that it has been practised. According to the statutes exemptions are to be granted only with the express condition that the articles in respect to which they are claimed are of such rich workmanship, or are so fine in substance as not to admit of Hall-marking without injury. But the goldsmiths company have so interpreted the law that many classes of goods that are quite strong enough to bear the marks without injury, have been exempt. Of these goods so exempt, the practice of voluntary marking began with gold chains to satisfy the desire of some purchaser who wished to have some guarantee of quality in addition to the word of the salesman. There are so many persons not properly belonging to our trade who are selling our trade articles, particularly chains and rings and watches, that in the interest of the industry, the public ought to have some official guarantee of the quality of what they are buying. I say this more in the interest of the trade than of the public. There is a very high authority for the statement that the "public is an ass" and in the matter of gold and silver purchases I believe it.

By the practice of the goldsmiths company gold chains are exempted from the duty and from marking, and yet respectable dealers, who have a reputation to guard, who have a fixed place of business and whose word might safely be taken as to the quality of their ware, prefer voluntarily to get these wares officially marked. On the other hand peripatetic dealers, with no "local habitation" and most likely a false name and who probably could not be traced if wanted two months after a transaction, offer and sell *apparently* similiar chains but of course for obvious reasons without the Hall-mark. This is not only a fraud upon the purchaser but an injustice to the proper trader. The present position on this question is that it is now proposed to do away with the entire system of "hall marking" gold and silver and to repeal *en bloc* all the statutes which have regulated that marking. It is suggested that all marks be included under the Merchandise Marks act of 1877; that the Goldsmiths company and the assay offices shall be left to arrange rules and regulations for marking under a voluntary system. I really cannot see the objection to compulsory Hall-marking. There is much to be said in favor of it. Its very antiquity and world wide adoption should cause some hesitation before abolishing it.

Another question that has been discussed amongst our manufacturing jewelers lately, is your proposed great World's Fair in 1892. It would have been some inducement to our people to take part in it if it had been held in your city. I do not know that even to New York, however, our manufacturers would have been prepared to rush with exhibits. The chances of doing business are so limited. I am not finding fault with your arrangements and your systems: they are yours and not ours and you have a perfect right to make them as you think best. But I do not think it likely that many members of our industry will care to accept your courteous invitation to your fair, seeing that practically you decline to admit their goods to your markets. Your duty of forty-five per cent. may be a judicious imposition on behalf of your own manufacturers, but I fear that in the face of it our manufacturing jewelers will not be able to see sufficient business results to justify their active co-operation in your exhibition. No doubt many of them will visit it; I had made up my mind to visit it when there was a likelihood of its being held in New York, but I seem to hesitate about Chicago. There are many hundreds who already think as I do on this subject, but the loss will be to those who do not go, for it is the general belief that it will be *the* exhibition of the world and of all time. That the jewelry, gold, silver, and horological sections will be features of unprecedented and of unsurpassable interest, is a foregone conclusion with those of us who had the pleasure of seeing your exhibits at Paris last year.

The day after I wrote my last letter to you the annual meeting of the Birmingham Jewelers' and Silversmiths' Association was held. This meeting has been made memorable by the address of Mr. Joseph Chamberlain, M. P., who proposed "success to the jewelers' art," in a speech full of historical interest. I am disposed to differ from even so eminent an authority as he is, in respect to some of his dates, but his remarkable speech fully justified the anticipation of it. The jewelers form no insignificant part of Mr. Chamberlain's Parlimentary constituency, and he has a happy facility of always interesting them in matters connected with their own trade. He was, therefore, quite at home in proposing the toast entrusted to him, and he gave additional zest to his speech by his allusion to the proposed repeal of the plate duties.

Another subject of much interest just now is the very well prepared paper, read last month before the society of arts, on "Recent progress in British watch and clock making," by W. Julien Tripplin. Papers of this class do not usually excite more than a temporary interest in the members of our trade, but the importance of this subject and the ability with which it was handled by Mr. Tripplin, are fully appreciated by the trade and by the public. There is no doubt greater attention will be paid to the present requirements of our industries, in view of the foreign competition we have to encounter.

VIGILANT.



A JEWELER ON HIS TRAVELS.

NEW ORLEANS, March 30, 1890.

There is considerable truth in the oft repeated saying: "self contentment is killed by travel," and if some of New York City's jewelers could see with the eyes of this jeweler upon his travels through the New South, they would have reason to make unpleasant comparisons between their own want of enterprise and not a few thrifty examples of what a jeweler of this generation should be.

In the start out, if any of us think ourselves capable of "showing those Southerners" in the states passed through *en route* from New York, and south of Mason and Dixon's line, the entire superiority of the jewelers of the North—our greater energy—greater knowledge, we are apt to have less conceit when the trip is half over, and none at all before it is finished.

Let us leave such big towns as Atlanta and such sufficiently advertised Chicago-like places as Birmingham out of the comparison if you will. We New Yorkers can look with considerable profit and susprise upon a pen picture of a jewelry establishment in a town like Thomasville, Georgia, fifteen or twenty miles from the Florida line. Thomasville has perhaps five thousand people to whom to cater, and included in these are a goodly proportion of negro families, the heads of which work for from 50 cents to $1.50 per day, and who consequently, don't buy any great number of precious stones or Gorham silver table services.

Nevertheless you walk along the stone side-walk of Broad street, the main business thoroughfare, and presently you come to the name Joseph Jerger, cut into it, and you stop before an imposing stone-trimmed brick store, in each of the two plate-glass windows of which is exhibited a much prettier assortment of sterling silver novelties and tastefully set diamonds than some New York jewelers take the trouble to make, who carry five times the stock and who have the wholesale ware-rooms of the manufacturer at their very doors, instead of a thousand miles (or considerably more) distant.

Nor will the comparison stop at the exterior or at the threshold. Within the establishment are the same evidences of thrift, and, although the father and two sons have no clerks to assist them each of the nine cherry wall cases and the same number of counter cases has had such pains-taking attention that every single article seems new and attractive.

Any jeweler among us would know at a glance that so large a stock could not be "turned over" very often in so limited a market, and we give all the more credit to the men who do not allow the daily dull "demnition" grind to become so old a story as to discourage the effort required to keep things "ship-shape."

Mr. Jerger. Sr., tells us that the little one-story wooden shanty, which he points out down the street aways, was the home of his stock in trade when he commenced, twenty five years ago, and we are none of us surprised that the present large stock surely invoicing not less than $25,000, and the brick block of stores, one of which is occupied by it, and a comfortable home on a pleasant street near by have been the direct result of the business-like shrewdness so manifest to us. Needless to add Mr. Jerger is an admirer of and a subscriber to THE CIRCULAR.

The jewelry shops in Canal street, New Orleans, need no description here; they are just about what we expect to find in the principal street of the principal Southern city, but they presented a rather strange appearance to our Northern eyes the other day with the waters of the Mississippi flowing into their very doors. The worst of it was they couldn't tell when the water would stop rising as it did at midnight of that day. We are told that any hard rain

floods that side of Canal street to the shop doors, pedestrians cross the side-walk upon bricks or on boards laid across them. Not since 1849 however, has the Mississippi behaved so threateningly as it did on the occasion of our visit, and the Crescent City which lies two feet or so lower than the river, at once appropriated $50,000 to so strengthen the levee at dangerous points, as to prevent a recurrence.

What chiefly interested us, as jewelers, in New Orleans, were the pawn shops, not for the reason that we were following a Northern habit of searching out stolen goods, but because hundreds of the old Southern families during and after the war were so reduced as to pawn old heirlooms, fashioned in gold and silver and set with all manner of precious stones. They received but the merest fraction of their value, and old Fass, the pawnbroker, with his fellow Shylocks in the old French quarter, principally on Royal street, still has some of these old relics. When you next visit New Orleans and are in the vicinity of that famous old French market, which is still the base of supplies for the best New Orleans kitchens, it will not prove uninteresting to spend a day roaming through the old "*quartier Francaise*," which looks for all the world like most parts of Paris, and when you come upon any of the old pawn shops have a look at the jewelry which testifies of the almost regal magnificence in which the first families of the South lived in *ante bel um* days.

Like enough you'll be tempted to spend a few dollars in securing a reminder or two of such a visit; our investment amounted to fifty-three dollars—forty-five of which secured a pearl necklace, bracelet, brooch and ear drops, which doubtless cost the former possessor ten or twenty times as much, if they are but "seed" pearls. Six dollars was paid for a pair of opera glasses, encased in coin silver—massive and beautiful in pattern. Two dollars made us the possessor of a quaintly engraved gold ring and the opal in its setting has considerable "fire" in it and no flaws.

You will next hear from me from old Mexico.

C. U. Later.

Adolph Lange.

During the first half of the present century, the mountainous provinces of Silesia and Saxony were, perhaps, the poorest districts on the inhabitable globe. They were the home of the notorious "weavers' misery," which seemed to be beyond human effort to ameliorate. Public attention being drawn to the pitiable condition of these regions, charity was invoked for the inhabitants in all civilized countries; various propositions were made to the governments of the respective principalities, with the object of bettering the condition of their people and permanently relieving them from the extreme poverty in which they had so long lived. Among other propositions, was one submitted to the Saxon government in 1845, in which it was claimed that the desired end could be attained by the establishment of a watch industry in their territory, as the development of the industry in the Jura and Black Forest regions had permanently relieved a population who had previously lived in a similar condition. The idea commended itself to the government, but the right man had not yet disclosed himself. It was necessary that this man should possess both skill and untiring zeal. He should not be simply a watchmaker, but should unite the talents of the instructor with those of the organizer; he should be a scientist and a mathematician, and should be able to conform his preconceived ideas to the whims of a people, who, in their struggle with poverty, had become feeble in body and obtuse in mind. Such a man was Adolph Lange, who finally came forward and proposed to establish a watch industry.



Adolph Lange was born in Dresden in 1815, the son of a gunmaker. Adverse conditions in his parental home had clouded his childhood. Poverty, which was at that time, the common lot of every artisan and tradesman, had limited his education, which, however, he improved after he had been apprenticed to a watchmaker in his native town. The youth soon understood his position. He saw a future for himself and never lost sight of it. It is true that the domain of mechanics reveals subtle forces that must ever excite the studious mind to renewed endeavors. Though many persons waste their energies in day-dreaming, Lange was not of that class; his nature craved things ponderable and definite; nothing but practical results satisfied him. He suppressed the exuberances of his fancy and trained his mind, while he learned not simply the rudiments of his vocation, but the sciences underlying it as well.

Soon after the expiration of his apprenticeship, he went to Paris to study and perfect himself in the higher branches of horology, which stand in most intimate relation with the science of measuring time. He was for several years foreman of the workshop of the celebrated Winnerl. He finally returned to Dresden, where he soon married the daughter of his former master and became a partner in the latter's business. His principal work was the construction of astronomical clocks, chronometers and watches of precision in which he displayed such remarkable skill that he soon became famous among the German astronomers.

He had thus proved his ability in his calling, while his character, his life, and his energy offered the necessary guarantee to the government of Saxony, that he would accomplish what he proposed. He proposed to manufacture principally good watches, and he considered a horological school as the first and foremost requisite, in order to furnish the enterprise with active arms and hands. Toward the end of the year 1845, Lange, with the assistance of the government, established a school at Glashütte, which, up to that time, was one of the most poverty-stricken villages in the mountains of Saxony. It was not an easy task to find willing, acquisitive boys to become his pupils. Their parents imagined that besides weaving and straw-plaiting as practiced in the village since unknown times, there existed no other lucrative employment. Incredulously they listened to the solicitations of the stranger who strove to explain to them the superior benefits of watchmaking and the advantage of a horological school in their out-of-the way valley. No, their children should follow the old trades in which they and their ancestors had worked and languished. Ignorance is inimical to every innovation; habitual misery resists every endeavor to alleviate it.

But by force of untiring energy, Lange was finally successful in this unfriendly locality, and gathered together a few dozen weakly striplings into the small house in which he had installed both the school and the workshop. He taught them the parts of a watch and how to make them. This required much patience, but the instructor possessed it. After a little more than a year, he was able to send the first watches from Glashütte, fine, well-executed work, constructed with the most recent improvements by the uneducated sickly boys who were his first pupils. But these boys became the pillars of the watch factory at Glashütte; they grew into men who gradually improved in both body and mind. They were seized with ambition; performed their labor with zest; surrounded themselves with families, and, in a number of cases, became independent manufacturers. The beneficent influence of the humane watch maker from Dresden in years became more and more visible in the once wretched valley and its surroundings. His pupils became the teachers of other children and piece-work was introduced. In order to multiply the creative force, Lange procured suitable machinery and tools.

It is unnecessary to follow the subject of this sketch through his many spheres of effort. He was able to continue his life of usefulness for thirty years, and died Dec. 5, 1875, honored by the town which he created as well as by the whole country. Two sons, Richard and Emile, mourn him, both thoroughly scientific and practical watchmakers. It is the son Richard, who is contributing the valuable articles to The Circular.



FIG. 1.



FIG. 2.



FIG. 3.



FIG. 4.





FIG. 5.



FIG. 6.



FIG. 7.

PARISIAN NOVELTIES.

In the floral design, Fig. 1, the long leaves are made of brown gold, while the remaining leaves are of green gold; the petals consist of fine frosted silver, and the ribbon is of pale yellow gold.

Our Fig. 2 represents a gold bracelet in pierced work. On the top there is a trophy introducing a cupid's quiver and a torch adorned with brilliants, and also two sprigs of flowers and a ribbon in various colored gold.

Fig. 3 shows a brooch, being a floral arrangement in gold of two colors, (yellow petals and green leaves) with a bird, chased and oxidized, having bluish shades nestling in it.

Fig. 4 is a copy of a very elegant scent bottle in the Louis Seize style, in chased gold of various reliefs. The pastoral trophy is most daintily done, and comes out prettily on a pale blue enameled back ground. The ornament running along the border is boldly cut, as well as the godroons on the cover, and the corded course underneath it.

Fig. 5 is the copy of a pretty scarfpin in gold. The inquisitive insect, at work on the strings of the harp, evidently endeavors to find out how true may be the old saying: "music has charms."

Fig. 6 shows a pretty locket, or pendant in chased gold on a dark blue enameled background. It may be worn, hanging either from a velvet ribbon, or a necklace, or simply caught on the side of the waist with a bow knot. It generally contains a watch.

Fig. 7 shows a shell made of imitation diamonds (with a pearl in it) caught by a hand in carnation colored enamel. It makes a very original earring, whose pattern is more suitable for a fancy ball than for daily wear.

Fashions in Jewelry

A Lady's Rambles Among the Jewelers.

Stones, Precious and Semi-Precious.

Something was said last month about fashions in colored stones. This is confirmed by the new jewelry not yet in the market. The stones most used are the carbuncle garnet, the Spanish topaz, whose tint is deeper than that of its Brazilian sister, a pale blue clouded stone known as the Amazon, rosaline, which is the name given to the rosy part of the conch shell that is now used combined with gold in the new forms, the ruby spinelle with its flash of yellow, of course the moonstone, and used in other rings the sardonyx and jade.

*** *** ***

With the exception of the rosaline, diamonds are used as accessories and with a lavishness that either argues a new era of wealth or an immense output of the diamond mines. Diamonds are used chiefly as thickly set borders. Their combinations of color and brilliancy appeal to people of artistic tastes and women who know how to use jewels in giving accent to the toilet, rather than as displays of vanity based on the actual commercial value of the piece.

*** *** ***

Some of the jewelry shown to a woman of suggestive mind would inspire a toilet. Such are the open petalled flowers cut out of sardonyx, the apricot tints of which are so soft and rich in stuffs. These flowers have dew drops of diamonds or have their petals bordered by tiny gems. The lovely translucent jade jewelry harmonizes well with the greens which seem to be as fashionable as ever this season.

*** *** ***

The forms in gold jewelry are modified by the all prevailing devotion to the heart. The carbuncle, amazons, topazes and the rosaline alluded to above are cut heart shaped and set in round foliations of gold such as prevailed in the Renaissance jewelry of last season. When these are desired to be more costly they are sprinkled with diamonds. The rich hues of the dark topaz and *cabochon* garnets combine handsomely with the yellow gold and are very becoming.

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The moonstone shines better by the cooler lights of silver than the yellow radiance of gold. In the best designs where gold is used it appears only in narrow rims, but silver setting shows more lavishly.

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Three cherub heads cut from sardonyx and set in a row is one of the newer designs. Each little head is wreathed by two rows either of diamonds, emeralds, or rubies.

*** *** ***

Nothing new can be said of diamonds, but all that has been said heretofore might be repeated with truth. They are omnipresent. In a necklace recently seen from the single row of large diamonds depended festoons of diamonds, and between each of these hung a square emerald at least a half inch in dimensions surrounded by diamonds.

*** *** ***

A spray of maiden's hair fern is one of the prettiest fancies worked out in diamonds. The form was rendered by a large diamond, and a knife-edged setting gave the fern-like indented edge.

*** *** ***

Colored stones are paralleled by colored pearls. A superb bracelet expands in three lines; one holds a pink pearl, the center a black, the third a white pearl. These are all of the same size and are arranged slantwise, accompanied on each side by a large diamond.

*** *** ***

The entire space allotted to jewelry in this magazine might be devoted to describing single instances of heart shaped jewelry. No form was ever so universally popular. Of course a little sentiment mingles with it, but fashion is more potent. Nor is it found alone in jewelry, but in every possible thing that can be found in a jeweler's establishment. Double hearts of twisted wires are used for pinning babys' bibs. So does fashion rage from the cradle I had almost said to the grave, and doubtless it would have been true.

*** *** ***

Accompanying the heart is the bow, and sometimes the coronet. The bow is really a very pretty, graceful addition. The coronet seems a little out of place on this side of the water, except as we may all aspire to be American duchesses. Diamond bows are the prettiest of devices for pinning a bit of lace or bonnet strings. They seem so unpretentious and are really so elegant.

*** *** ***

Occasionally one sees the crescents and stars, but the orient pales by our Louis XVI. Stars take the forms of waving rays when they are seen. In this case they are very magnificent. But what was formerly known as a "diamond star," an avowed object of every woman's exhibition is not in favor. An exceptional instance seen the other day was a brooch composed of two crescents enclosing a star.

*** *** ***

An allusion was made last month to sporting jewelry. Some dealers seem to make a specialty of this, and they do it very magnificently. The horse shoe naturally prevails, but it combines in new ways and chiefly is used as a supporting frame work of diamonds, rubies and sapphires for their sporting forms. Jockey caps are simulated in precious stones, and hang from jewelled crops. Stirrups dangle incrusted with jewels, and bits make connecting links like a festoon. Sometimes almost all of these are united in one piece with a horse's head in chased gold peering through.

*** *** ***

The endless forms in which those convenient little articles that school girls call "stick pins," now come, are vastly entertaining and in many instances are really beautiful examples of the jeweler's art, although sometimes they are novel rather than beautiful.

*** *** ***

Among some of the fanciful designs is fortune's wheel brushed by a pearl wing, a pearl feather, of which a pen is made, a pearl trout, a pearl hen with gold legs and jewelled head. In these cases the accidents of false pearls have been utilized.

*** *** ***

A stork standing on one leg a clown's head of onyx topped by a green cap, a tea kettle, a lion of tourmaline, with a diamond head and mane, monkeys in every possible attitude, a hound of diamonds in full cry, a spider's web with fly enmeshed, acrobats in enamel are among the grotesque fancies that amuse and adorn man and woman kind. Bunches of pearl grapes should be included as a pretty fancy.

Mourning jewelry is much more varied, and is prettier than it used to be. One of the newest designs, is in the round open worked brooch enameled with black, showing but the tiniest edge of gold and is enriched by setting diamonds at the points of intersection. In dead black jewelry nothing compares with the lustreless pansy with a single diamond in the center.

*** *** ***

Sleeve buttons of chess board design with gold and platinum and a diamond sunk in the center are produced for men.

*** *** ***

Madame Recamier, the Devonshire and other ladies of history and romance are used daintily set as sleeve buttons. The other side is an oval and chased button.

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Amber shell combs with their rich foliated edges of gold, often sewn with diamonds and other jewels belong to the present style of hair dressing.

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A new method of using a watch pendant is to have it hang from a large gold buckle.

*** *** ***

Flexible gold wire bracelets are growing in favor. They have the merit of becomingness.

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Gold hat pins are a desirable addition to the toilet. They are unpretentious, the head being a knot of woven wires.

*** *** ***

An easter pin consisted of two bars holding the word Paques, and suspended from it were pearls like eggs.

Novelties in Silver.

There are no new designs to report in silverware. The foliations of the Renaissance period and the perforated silver which used formerly to sit on Chippendale tables, are the prevailing forms. The perforated Renaissance designs richly chased are seen in large coasters lined with glass that are used for the floral center pieces on dining tables. The swell florists use these altogether, and if not for flowers, keep them filled with foliage plants.

*** *** ***

The combination of silver and glass is very popular. Large silver mounted glass punch and salad bowls, decanters, molasses jugs, show how silver and glass set one another off.

*** *** ***

There has been a large number of small, pretty and useful articles in silver brought out that are a boon to people who are wanting cotillion forms and prizes for card parties. The latest is an acorn of chamois, filled with emery dust for sharpening needles which is confined in a silver shell enriched with repousse designs.

*** *** ***

Another is an Easter egg of repousse silver in the feathery sort of design that prevails in all these articles. By pressing a spring the cover fles open and reveals a receptacle for the thimbles and three apertures for papers of needles. Both this and the emery acorn can be and are intended to be hung from the chatelaine.

Another Easter egg which will appeal to a large class of people that likes to have the implements handy, by pressing a spring in the same manner shows crosswise a grater in silver gilt By lifting the grater a receptacle for nutmegs is discovered. A word to the wise is sufficient. The ornamentation of this egg corresponds to that of the chatelaine egg.

*** *** ***

The acorn is a favorite form. Individual salt-sellers take this shape. These are supplied with a cover and a bar for a handle which makes the base of the acorn, the holes being in the pointed end. These are gold lined to keep the salt from corroding the metal. Silver peppers to accompany these take the form of jugs.

*** *** ***

Another design for table salt—and these come in pairs—has the form of an iron trestle, but of a trestle enriched with luxurious scrolls. Smaller salts are cushion-shaped, but the same ornamentation prevails.

*** *** ***

Silver tea balls are also egg-shaped and enriched with repoussé work. The tea balls are used almost exclusively on formal occasions, and make a pretty diversion for ringed fingers. The tea pot is no more. In its stead is the hot water kettle, and there is a preference for Queen Anne shapes, who as Pope remarked, "Sometimes counsel took and sometimes tea."

*** *** ***

Vinaigrettes come egg-shaped, but the more ingenious vinaigrette, which is, in fact, almost a toilet case, is an egg-shaped form in silver gilt. This opens vertically, and tucked away inside is a tiny glass bottle and two small pearl headed pins for an emergency. On the other side is a mirror, small to be sure, being just the size of the egg which you can carry in the hollow of your hand, but as every woman knows a small piece of glass coated with mercury can do a good deal of execution.

*** *** ***

Another form in which table salts come and which can be used in all these other ways, is the pine cone. Eiffel towers and lighthouses also serve as peppers.

*** *** ***

It is interesting to see how chatelaines are provided to suit the temperament of the wearer. For example, a person of religious mind has her needlecase in the form of a missal, her thimble case looks like a swinging censor, her vinaigrette an angelic trump. If she is more frivolously minded her pincushion is an open fan, she has a button hook array in a case, a small niello or repousse receptacle for pins, and a dainty box for cachous. If she is literary she has a telescopic pencil, a small knife, a stamp box marked "U. S. Mail," and pendant tablets. Among chatelaine clasps the latest is a flight of swallows.

*** *** ***

Silver boxes for elevated railway or street car tickets have become a necessity for business men. The boxes are ornamented with niello work, or are cased in relief. They are open at one end and the tickets are slid in and rest on a spring. This presses them to an aperture in the back, where they can be dexterously sent out by the thumb.

*** *** ***

Silver maple leaves are used for brooches.

*** *** ***

Grape scissors are among the table appointments in silver that are now considered necessary.

Oblong crumpled trays are intended to hold silver change.

*** *** ***

Calla lillies in silver intended for hair pins, appeared about Easter.

*** *** ***

A silver paper knife of interest was engraved with a fleet of Gaches, a very pretty piece of work. In one corner to sustain the grip was a coil of rope.

*** *** ***

Puzzle rings and puzzle bracelets of silver fill an idle hour. They have the form of an orderly procession of interlacings, but when solved become a lot of crumpled rings.

*** *** ***

Memoranda come in tablets with silver backs inscribed with the word "Memo."

*** *** ***

Silver hat pins with interlaced heads are useful as well as ornamental.

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Silver key rings are introduced in the form of wishbones and of old fashioned double hoop earrings.

*** *** ***

Coin is not especially ornamented, but fac-similes of different pieces are used in ornamentation. A spoon has the bowl overlaid with representations of dimes, and midway on the handle is a ten cent piece. Bracelets are adorned in the same way.

*** *** ***

Silver purses now have round clasps made of a number of diagonal bars, which fall apart when unhinged and leave the bottom of the purse fully exposed in the hand.

Bric-a-Brac, Art Glass and Pottery.

The colored Mexican statuettes and plaques that have recently been introduced into this country are making a place for themselves by reason of their humor and expression of character. A feature of the Easter season was plates introducing Lenten diet with ham, eggs, biscuit, wonderfully realistic. The little statuettes chiefly of peasant scenes, a girl on a donkey, man leading it, market men and women with picturesque attire and about their diversions, are very clever indeed.

*** *** ***

On the other hand from France are such piquant and choice statuettes and groups, as dandies at the races on tip toe, and evidently with money on the in comer. One group is very funny. They are bourgeois tourists, the woman stands on a chair and the man steadies her with one hand and looks through an opera glass with the other. The excitement of the occasion is fairly contagious.

*** *** ***

Candlesticks of wrought iron have the receptacle on the end of an ornamental bar, and from below swings a sign on which is inscribed good night, pleasant dreams, or sleep well.

*** *** ***

Umbrellas and parasol handles are works of art. These are imported and beautifully carved. Bamboo makes a favorite stalk. One of the most interesting handles was made of widths of bamboo bound together and turned up at the end. Men's umbrellas have spirals alternately of silver and ivory. Stained ivory is used in handles. Silver is nearly always used in combination, and in no prettier way than that the Japanese have brought us by leaving irregular openings through which ivory shows.

*** *** ***

Genori ware with its large forms and rich coloring appeals to the eye. Italian wares are growing in favor. Much of it comes in odd designs, such as a lettuce leaf wonderfully modelled and colored for a salad bowl.

*** *** ***

Glass ewers with incised ornamentation are overlaid with gold. The effect is very rich.

*** *** ***

Enamelled glass is introduced in forms of great beauty. Garlands and festoons taken from Louis XVI. styles are draped over the rounded forms of bottles. Roses, forget-me-nots, and ribbons in delicate dyes seem made for the boudoirs and dressing rooms that are now so popular.

*** *** ***

German glass, dark emerald green, being preferred with armorial designs in enamel, are sought for among objects of art. Elsie Bee.

How to Color Gold.

THE COLORING of gold articles is a process for dissolving from the gold more or less of the alloy, in order to give the articles a surface having a different quality or fineness to what it originally possessed.

For good gold, that is 18 karats or finer, melt in a common pipkin the following articles: No. 1. Alum, 3 ounces; nitrate of potassa (saltpetre,) 6 ounces; sulphate of zinc, 3 ounces; common salt, 3 ounces. When melted mix well together, and immerse in it the articles to be colored, removing them occasionally to examine the color. When the color appears satisfactory, take the articles from the solution, place them on a piece of sheet iron and allow to cool; then immerse in dilute sulphuric or acetic acid, which will remove the flux, after which they may be rinsed in warm water, to which a little potash or soda has been added, and finally brush with hot soap and water, again rinsed in hot water and dried in clean warm boxwood sawdust.

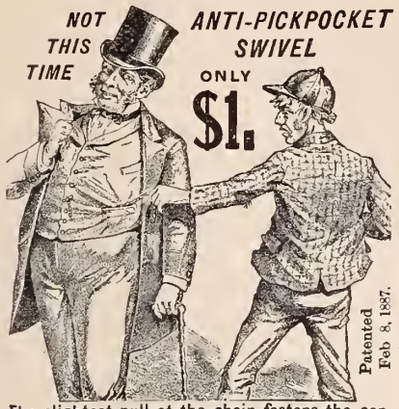
For medium qualities of gold, that is, from 18 karat down to 12 karat, use the following composition: No. 2. nitrate of potassa (saltpetre,) 4 ounces; alum, 2 ounces; common salt, 2 ounces. Add warm water enough to make the whole into a thin paste which place in a small pipkin or crucible, and boil. Attach a thin wire to the article to be colored, and hang it in the paste, allowing it to remain from ten to twenty minutes. Then remove it and rinse in hot water, treat it with the scratch brush, rinse again, and replace in the coloring pot for a few minutes. The length of time it is subjected to the action of the coloring bath depends of course on the amount of alloy to be removed. When the color suits, the article is removed, rinsed and scratch-brushed as before, then brushed with soap and hot water, again rinsed in hot water, and dried in the sawdust.

When the articles are of as low a quality as 12 karats—if they are slightly made, great care must be used or the coloring process will eat away so much of their substance as to destroy their strength. The coloring paste should not be used on articles lower than 12 karats.

Electro-plated articles are often colored, but the plating must be of considerable thickness in order to stand the operation. The following is considered a good composition: No. 3, sulphate of copper, 2 dwts.; French verdigris, 4½ dwts.; chloride of ammonium (sal-ammoniac), 4 dwts.; nitrate of potassa 4 dwts.; acetic acid about 20

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dwts. Reduce the sulphate of copper, ammoniac and saltpetre to a powder in a mortar, then add the verdigris, and finally pour in the acetic acid, a little at a time, stirring it well all the while, till the whole becomes a bluish green mass. Dip the article to be colored in this, then place on a piece of sheet copper, and heat over a clear charcoal or coke fire till it becomes black. Then let it cool, after which it is put into a tolerably strong pickle of sulphuric acid and water to dissolve off the flux, rinse well in hot water, containing a little potash or soda, brush with soap and hot water, and dry in the sawdust. If the article is scratch-brushed while being colored, it will come out of the pickle perfectly bright.

Another preparation for coloring either gold or gold-plated articles is: No. 4. Nitrate of potash, 5 ounces; alum, 2 ounces; sulphate of iron, 1 ounce; sulphate of zinc, 1 ounce. Mix well together, then add water to form a thin paste. Dip the article in this, gently shake off any superfluous paste, place on a piece of sheet copper, and heat till dry, then increase the heat for two or three minutes, plunge into cold water, and finish as before described.

Preparation No. 1 may also be used for coloring plated goods (heavily plated) by dipping the article in and heating, etc., as described under No. 4, till nearly black, then plunge into cold water, and finish as directed.

Gilt articles of poor color (as well as gold articles) may be improved by the use of gilder's wax, No. 1; beeswax, 4 parts; verdigris, 1 part; sulphate of copper, 1 part; melt and mix well together. No. 2, beeswax, 5 parts; alum, 1 part; verdigris, 1½ parts; red ochre, 1 part. Melt the beeswax and mix well together.

This wax is used by heating the article, rubbing the compound over it, then placing it on red-hot charcoal till the wax is all burned off. Place in very dilute sulphuric acid to clean it, scratch-brush, wash, etc., same as before.

Nearly every manufacturer has his own secret process for coloring gold, which he is not at all very likely to give away. But the foregoing processes are considered good.

ACID COLORING.

There are two processes for coloring, similar in purpose and effect; one, the process described in the preceding, is called dry coloring, because the chemicals used are solids, namely, saltpetre, alum and salt; but acid coloring has also come into general use on account of its being easier to manage and of the wider range of qualities of gold which can be submitted to the process. The purpose is simply to remove from the surface of the gold all alloy so as to leave a coating of pure gold of rich, yellow color, which is very finely frosted. To obtain this with perfect equality, it is necessary to have the surface smooth, then anneal and boil out in pickle made of nitric acid and water; lastly annealing black, before dipping in the color. A good formula for coloring mixture: Saltpetre, 9 oz. 12 dwts.; salt, 4 oz. 16 dwts.; and muriatic acid, 6½ ounces. The effect on the article is necessarily to reduce the weight; therefore, the quicker it is done the better, and, if the gold be properly alloyed, 1½ minutes is sufficient time to expose it to the action of the mixture, which must boil up till it fills a No. 10 black-lead crucible. In all acid-colored work, there is between the body of gold and outside colors, a brown coat of partially colored material, and if the work is left too long in the mixture, this coat is much thickened, and the fine color may be easily peeled off, especially if the gold be too low in quality. The finest color and best surface may be obtained on about 15 karat gold, but the range is from 12 to 20 karats, and to be successful the operator needs considerable practice. Before using a crucible it is necessary to have it well annealed, as accidents are thereby avoided. To prevent a change in the color of goods after coloring, it is well to wash them in ammonia, which will neutralize any salts that remain in the somewhat porous surface, and if the articles are scratch-brushed, which slightly brightens them, they are less liable to soil. It is best not to give the ammonia bath until after brushing, following with a good wash in hot water and drying in sawdust.

Advice to Watchmakers' Apprentices.

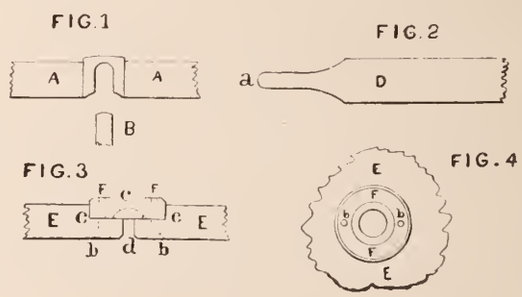
BY A MAN WHO HAS SPENT TWENTY YEARS AT THE BENCH.

IT WOULD BE a mistake for an ordinary watchmaker called upon to put in a new verge, or to close the holes and repair an old verge, to put in new bushes like those in English verge watches.

The best course to pursue is to place a cap jewel over the pivot in the cock, and to slip a piece of mainspring, formed into a dovetail, into a recess filed in the potence.

I remarked when I commenced to speak of the verge escapement, that fitting verge pivots to bushes required a peculiar skill which it would not pay the ordinary watchmaker to acquire. To convince any doubter of the truth of this statement, let him bush the top pivot hole to a verge movement and try it for "motion," noting carefully the arc of vibration. Afterwards let him apply an end stone as described later on, and note the difference. The writer admits that, as regards position results, the brass bushes in which the pivots have exactly the proper form, afford the best record; but so much time and practice is required to procure these results, that it will not pay the ordinary workman to acquire the skill. For the benefit of those who would like to attempt it, I would say that the entire "secret," if I may be allowed to use the term in connection with mechanical matters, lies in shaping the end of the pivot, and the hole in which the pivot runs, in fact, arranging the parts so that the friction will be alike whether the watch is lying down or hanging up, this explanation will also elucidate the mystery referred to in a former article in regard to verge watches with jeweled holes not performing as those running in simple brass bushings.

The form of the end of a pivot which will perform best in a brass bushing, can be compared to that of the round or large end of an egg, and the bottom of a pivot hole, to the small end of the egg. Now it is evident at a glance, that by this construction a greater friction is generated than would be if the pivot ran with its rounded end on a flat surface. It was customary among some of the best makers to drill a bush after it was set, then bottom out the hole with a drill rounded on the point; and to further finish, harden and burnish the interior of the pivot hole by a burnish, shaped as in fig. 2. The point *a* being revolved in the hole with a hair bow, while the burnish *D* was pressed forward. If a cap jewel is applied to the top pivot, an ordinary Swiss steel plate, such as we find in anchor or cylinder watches, must be taken over the balance and a recess turned in the cock which will receive it. A vertical section of a verge balance cock fitted up in this way is shown at fig. 3, where *E* represents a portion of the cock, and *F* the Swiss regulator plate, held in position by the screws *b b*.



A view of fig. 3 seen in the direction of the arrow *f*, is shown at fig. 4. Such a jeweling is very readily done and invariably pleases customers who are favorably impressed with any part which contains a jewel. The reader may ask, why not use the brass bush shown in fig. 1, especially as the writer has claimed for it the best performance. The reasons for advising the jeweling method, is because, as stated above, it is much more readily performed by the inexperienced workman; and, as just suggested, the average customer will pay a dollar for a jewel, when he would hesitate at twenty-five cents for a brass bush. And again, as regards the time keeping qualities

of a verge watch ; at the best, people who would be satisfied in one instance would also be satisfied in the other.

The lower pivot should also be bushed and have a dove-tailed jewel or a bit of hardened steel as stated above. The recessing for the cap *F* is best done with a universal face plate, but a cock can be cemented on to a wax chuck and the recess turned in with a graver. The recess should be sunk until the pivot hole is opened ; then the cap for the end stone is cemented fast until the holes for the screws are drilled. The foot of the potence is filed across with a small square file until the bottom pivot hole is reached, when the sides of the recess are under-cut to hold in place the dove-tail slip of main-spring which is provided for the foot of the verge pivot to rest upon.

As a rule the fusee and chain to the old English verge give but little trouble, but sometimes we get one in which the chain turns over flat when partly wound. In such cases, first see if the fusee is perfectly upright and not badly worn in the pivot holes ; if these errors exist correct them ; then see if the barrel is upright and runs true in the flat. If the chain still turns over after these corrections are made, change ends with it, but not without changing the hooks, because if the barrel hook is applied to the fusee, the long finger which extends beyond the hook proper, will either unhook the chain from the fusee if allowed to run entirely down, or break out the little pin to which the chain is hooked Sometimes a chain will need not only to be changed end for end, but also have the hooks set reverse so as to bring the other edge in contact with the barrel and fusee.

Occasionally we come across verge watches which have bankings in the sink of the potence ; in such cases, if the escapement performs all right it is well to let them alone, but in instances where the verge trips, or over-banks, the best course to pursue is to put a banking pin in the balance rim, to strike against stop pins placed to catch this banking pin at the limit of each excursion of the balance beyond a certain arc ; this arc is from three-fifths to two-thirds of the revolution of the balance. We will now close the subject of verge watches and take up a style of watch giving much finer time results, viz.: the duplex. Most watchmakers have a dread of the duplex escapement, when in fact, it is one of the simplest escapements we have, and if properly understood, is easy to manage.

Restoring the Luster of Silver.

THE BEST way to restore the original dead or lustrous whiteness of silver goods, lost or impaired by exposure to sulphurous atmospheres, or by having been too often and perhaps carelessly cleaned, is effected by annealing in a charcoal fire, or before the flame of a gas or oil lamp, by means of the blow pipe, which affects the destroying of all organic matter adhering to the surface of the article, at the same time oxidizing on the surface the base metals with which the silver is alloyed. The article is allowed to cool, and then immersed in a boiling solution, consisting of from one to five parts of sulphuric acid, and twenty parts of water—the quantity of the water depending upon the quality of the silver the article is made of ; the coarser the silver, the more acidulated. The boiling in this solution has the effect of dissolving the extracted deposit of oxide, and leaving a coating of pure and fine silver on the surface. The time for allowing the articles to remain in the solution also depends on the quality of the silver; while good sterling silver will be whitened in almost an instant, common silver will take a minute, or even longer ; care is, however, to be taken not to allow the articles to be too long in the solution, as in that case the surface will turn into an unseemly grayish color, and the manipulation will have to be commenced afresh ; if the silver is very common, the article will require to be repeatedly treated in this manner before the desired whiteness is obtained, and in some cases will even have to be silvered by the galvanic method. As soon as the desired whiteness of the article whilst in the acid is observed, it is removed and quickly thrown into lukewarm water ; it is advisable to have an additional vessel with warm water at hand to place the articles in after having been removed from the first. The articles are then immersed in boxwood sawdust, kept in an iron vessel near the stove, or any warm place, when, after thoroughly drying in the sawdust, the article will be found to look like new. Any places on the article desired to look bright, are burnished with a steel burnisher.

The annealing, prior to placing the article into the acid solution, requires some care and attention, or else the workmanship of the piece will be irretrievably lost. It is first of all necessary to closely examine the article, whether it has been soft soldered previously, as under such circumstances it is unfit to be annealed, as the heat necessary for this would burn the solder into the articles and produce blemish past remedy. It is, secondly necessary to remove all stones, steel, or any material not silver, or liable to be injured in the fire, and it is also advisable to remove pins or tongues from brooches, or spiral springs attached to some very showy ornaments, to produce a shaking or trembling greatly admired in artistic jewelry, in order to preserve the hardness of the pins and the elasticity of the springs. After being satisfied that these precautions have been observed, and the article is without risk fit to be annealed, another precaution, and especially by mechanics not accustomed to such work, should be observed, namely, to prevent an over or under heating. If the article is overheated, it is liable to melt, and if underheated, the organic matter adhering is not effectually destroyed, and the surface not sufficiently oxidized. In order to obtain the required degree of heat, and running no risk of either under or over heating, the article is held with a pair of pincers very close over the flame of the lamp so as to be covered with soot all over, and then exposed before the blast of a flame by means of a blow pipe, until the soot burns or disappears, when quite sufficient and yet not more heat than is required is obtained. The practice of this last precaution will greatly assist the manipulation and prevent accidents.

Silver ornaments which have merely become oxidized by exposure in a sulphurous atmosphere, and not by repeated cleaning, are simply restored by brushing with a clean tooth-brush and a little carbonate of soda.

Accidents in Pouring.

MOST jewelers, at some time or other of their experience, may have met with accidents in the melting and pouring of their alloys, such for instance, a pot cracking, the spilling or the upsetting of a portion of the metal from the crucible into the fire. The following mode of recovery of lost metal we have found the best and most practical in the workshop, with the ordinary appliances usually at the command of jewelers and gold workers. Collect the whole of the burnt coke, ashes, and other refuse used in the smelting operation and, first of all, well wash it several times with water, to remove the dust and other extraneous matter ; the sediment left behind is then well dried and pounded as fine as possible in a cast-iron mortar; it is afterwards put through a sieve as fine as is convenient to prevent the small particles of gold from going through the meshes with the powdered dust. The gold is now picked at this stage from the refuse in a sieve ; and if there be any solid particles of refuse still unpounded, it is put through the process again. It is very seldom that the whole of the gold can be collected when once spilt into the fire, but the larger portion of it can be recovered by these means. The remainder goes into the scraps to be treated by the refiner.

LARGE VASE.—An Imperial Russian princess recently presented to the Britannic Museum of London a malachite vase, 2½ meters high, (1 meter=39.37 inches). It is a work of the XIXth century.

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Mechanical Ocular Defects.

Their Nature, Cause, Correction and Relations to Functional Nervous Diseases.

Edited by C. A. Bucklin, A. M., M. D., New York.

[The aim of the author is to produce a clear and thoroughly practical course of instruction on the subject of "mechanical ocular defects," which is entirely void of useless technicalities and within the easy comprehension of every thinking student without his having had any previous technical or mathematical education.]



IN OUR LAST we finished the consideration of the nature of myopia, its inciting causes and the important subject of the effect of heredity. We will now pass to the consideration of the selection glasses for myopic persons. The usual complaint of myopic persons having acute vision and who have no astigmatic or muscular complications is as follows:

They are unable to see at a distance distinctly, but they are quite enthusiastic regarding their ability to do fine work well at the working distance. In these cases simple concave lenses will bring the distant vision up to a satisfactory point without any trouble.

For the purposes of determining exactly what the true acuteness of vision is, you select the concave glass which gives the most acute distant vision. You then give the very weakest glass with which the individual can retain this acuteness of vision. You frequently meet complications which occasion uncomfortable and annoying vision. These difficulties are usually experienced in degrees of myopia of $\frac{1}{10}$ or over. The first cause of the complication is the general lack of accommodations which is a very general and almost constant difficulty in a myopic eye. The individual although seeing distinctly and comfortably at a distance of twenty feet or greater, finds that objects appear annoyingly small when they are brought closer; this is caused by his inability to accommodate over the lenses as observed objects are brought nearer.

The nauseating sensations or swinging motion which many myopic persons experience when looking through their glasses are probably due to disturbances resulting from the abnormal relations existing between fixation and accommodation when the glasses are used. The second cause which occasions annoying sensations when concave lenses are worn, is any abnormal weakness of the ocular muscles, causing the disturbance between fixation and accommodation to be marked when the glasses are worn. This difficulty would not be annoying if the muscular defect does not exist. The third difficulty experienced in selecting lenses for myopic persons is the greatly reduced acuteness of vision, very frequently found in high degrees of myopia resulting from the damage done the retina when the stretching of the eye takes place in the posterior pole of the globe. Persons having myopia of $\frac{1}{5}$ will be encountered, having such defective vision from the above cause, that they are unable to decide whether the glasses improve vision or not.

Fortunately, however, there is but very little difficulty experienced in selecting distant lenses for myopic persons. The one caution to be observed is to give the lenses as weak as is consistent with satisfactory vision.

The class of myopic cases which give the opticians the greatest annoyance are those who not only have indistinct distant vision, but who also have what is unusual with myopic persons, annoying symptoms at the reading distance. Difficulties at the reading distance in myopic people are due to the following causes either singly or combined:

First.—The myopia may be of such a degree that the far point of bi-nocular fixation is so close that the necessary degree of convergence cannot be maintained without fatigue.

Second.—Astigmatism may so complicate the myopia as to make vision at the reading distance very annoying without the use of cylindrical lenses. Either of the above difficulties may exist singly or combined as causes of weak vision at the reading distance.

Third.—Late in life presbyopia may be developed to such a degree that it is considerably in excess of the original degree of myopia. These individuals wear concave lenses for the distance and convex glasses for reading.

The methods used in overcoming the above difficulties bring us to the consideration of reading glasses in myopia, a somewhat complicated subject. The simplest way of overcoming difficulties of convergence is by the use of concave lenses. Persons who have learned by practice from childhood to read through their distance-glasses, develop a power of accommodation which is not usually found in the myopic eye; this enables them to read through their distance lenses, the ability to do which in myopia is the exception and not the rule.

The majority of myopic persons who accept concave lenses for the reading distance will only accept sufficiently powerful lenses to enable them to remove the work to such a distance that convergence can be maintained.

Some myopic persons although having difficulties with convergence will refuse to accept the weakest concave lenses. They complain that all objects appear disagreeably small. Hundreds of these persons in Germany are wearing simply weak prisms, bases in, and state that they derive great comfort from them. Graefe ordered many of the prisms which are worn to-day for the relief of the above described difficulty. You will meet another class of myopic persons who will accept weak concave lenses for reading which are not strong enough to carry the working distance away far enough to relieve the difficulties of convergence; in these cases concave lenses will be used to relieve the difficulty, as far as possible, and additional assistance will be derived from the combination of weak prisms, base in, joined to the weak concave lenses.

When the astigmatism complicating a case of myopia makes it difficult to work at the working distance, the necessary cylinders are selected as follows: Correct the myopia for the distance over these lenses and select the best cylindrical correction for the distance. You then remove the spherical lenses and the remaining cylinders will be the reading lenses required.

When both astigmatism and difficulties of convergence complicate the case, select the cylinders as mentioned and you may be obliged to combine with them, one or both methods of relieving difficulties of convergence.

From the above it will be seen that myopic persons may wear as reading lenses, any one of the following forms:

1—Simple convex lenses. Presbyopia being greater than myopia.

2—Concave lenses. Same as used for distant vision. This indicates good accommodation.

3—Weak concave lenses, for difficulties of convergence.

4—Weak prisms bases in, for difficulties of convergence.

5—Weak prisms ⌒ to weak concave lenses, for difficulties of convergence.

6—Simple cylinders ——— used alone for reading.

7—Simple cylinders ⌒ simple c c, for correction of astigmatism and weak convergence combined.

8—Simple cylinders ⌒ simple c c ⌒ weak prisms, bases in ——— for correction of astigmatism and weak convergence.

From some one of the above lenses or combination of lenses, one

should be able after diligent experimenting, to overcome any difficulties experienced by myopic persons at the reading distance.

CORRESPONDENCE.

Montrose, Pa., April 8, 1890.

Dr. C. A. Bucklin:

I have a case of a man of 65 years—a printer by trade—both or either eye has triple vision. The full moon looks to him as three moons overlapping each other. Of course he has worn + glasses a long time, but this mixed vision is bothering him in near work; says that working on fine work for some time affects his spinal column and completely exhausts him. What can be done for him without coming to see you? F. D. MELHUISH.

If there are any suggestions as to what glasses to try on him would be glad to receive them.

ANSWER:—These difficulties are the result of irregular astigmatism created by mutiple irregularities in the lens, when complicated by any error of refraction which can be corrected its correction may assist the difficulty, when existing alone it cannot be corrected. It is not due to any disease and is not growing worse.

Binghampton, N. Y., April 9, 1890.

Dr. C. A. Bucklin:

I had a case this afternoon that Dr. MacFarland had given up, so the young man said. MacFarland sent him to me and told him if he got no help to come back and he would recommend him to some New York specialist. If I can't do anything with him I will try and have him come to you. I have made only a partial examination, but will give it to you and maybe you can give me some points, if I am able to make the case at all plain.

Young man 25 years old. Eyes constantly in motion laterally. Has been so from a boy. Thinks it was caused by medicine. Is a paper hanger by trade, can't see lines up and down in hanging paper. Gets worse and worse. Can't read anything on test-card at 20 feet. Sees horizontal lines on astigmatic fan very distinctly black, and all others are dim. Can see horizontal partitions in window sash, but cannot see perpendicular unless bends over and looks sideways. Can read large letters on signs across street. Concave lens, weak, make objects look smaller. Convex lens, weak, make then look larger and nearer. Says he can read with book close to him, but his trouble is in his work. The best he can see is to read the third line on the test-card at 20 feet (reading three letters) by the use of

$$+ \tfrac{1}{36} \text{ cyl. ax. } 90°.$$

What do you think of it? Is it probably muscular or is there a possibility of mixed astigmatism?

If you will kindly spare a little time and give me a pointer I will be very thankful. E. R. MASON.

ANSWER:—This case is one of lateral nystagmus. The motion of his eyes cannot be controlled, and but slight improvement can be obtained by glasses. Any improvement you can gain by lenses will be thankfully received by him. The doctor is a little disposed to try and fool you when he sends a case of nystagmus to be treated by glasses or any other method. A very high degree of astigmatism should be carefully looked for.

Malone, N. Y., April 10, 1890.

Dr. C. A. Bucklin:

Below I give you the result of an examination of a young lady's eyes, which I have just had occasion to test.

V = $\frac{20}{40}$ — in both eyes, with — $\frac{1}{72}$ ⊃ + $\frac{1}{36}$ cy. ax. 90° V = $\frac{20}{20}$ Then, too, for some reason or other, she has experienced other difficulty aside from poor vision. If she looks quickly or steadily at a given object her eyes converge and cramp, as she expresses it, so as to produce a sharp pain in the eyes, exposure to cold weather also produces the same effect. I thought of the possibility of a muscular difficulty and obtained, by examination, the following results: base up 5°, base down 8°, base in 7°, base out 21°. This amount of muscular power is not in accordance with the instructions I received from you, but I was not sure just what was best to do with this muscular trouble; give prisms combined with the first formula or not, and if they should be given in what position of base and strength. This case somewhat puzzled me because of three of the muscles overcoming more prismatic power than your instruction called for. K. F. G.

ANSWER:—The vision appears to have improved to a satisfactory degree by the glasses, but such glasses could not have been discovered except by accident through direct experiment. Such a formula could only have been discovered by the use of — $\frac{1}{72}$ c. ax. 180 ⊃ + $\frac{1}{72}$ c. ax. 90° which could have been transposed into the formula given in the letter. I should suspect a higher degree of refraction or some muscular defect or a conscious belief on the part of the girl that she looked pretty when she gave her eyes an agonizing stare. Possibly she has a $\frac{1}{12}$ of hyperopia which is latent. Careful experiment alone can decide these questions.

Ilion, N. Y., March 22, 1890.

Editor of the Jewelers' Circular:

Please advise me by return mail or in the next issue of the CIRCULAR what will improve the following case: A man can read XV at ten feet, but he says it is not as good as it used to be. No. 60 periscopic concave improves the right, and No. 48 periscopic concave improves the left. Periscopic convex improves reading. The two horizontal lines on the astigmatic chart are the darkest ones. WALTER RIX.

ANSWER:—The person evidently has simple myopia astigmatism requiring a concave cylinder. The strength of which from the statements shown should be about — $\frac{1}{48}$ c. ax. 90°.

The facts given are, however, not sufficiently numerous or clear for one to draw a very intelligent conclusion.

Flatonia, Texas, April 11, 1890.

Editor of the Jewelers' Circular:

A customer of mine commenced to use glasses 25 years ago, his natural sight for reading returned 6 years ago, but cannot see in distance 20 feet or more, now uses No. 14 concave for distance, but does not give entire satisfaction; age 70. What is the matter with his eyes? H. FRANKE.

The patient has that swollen condition of the lens which takes place during the developement of senile cataract, and which is called second sight. He will gradually become blind from cataract, after which the cataract may be removed and vision may be restored. During this period of the developement of second sight persons experience remarkable improvements from prayer, electricity and various means. Which improvements take place in spite of anything done and not as a result of anything they have done.

Three Months' Patents.

During the three months, July, August and September, 1889, the records of the United States Patent Office show that 109 patents, 21 design patents and 5 trademarks pertaining to the jewelry, watchmaking and kindred trades were granted. The following is a classified statement:

PATENTS.

Clocks.	Watches.	Time Detectors, etc.	Jewelry.	Optical Goods.
11	30	7	5	16

Silverware.	Tools.	Machinery and Processes	Metallurgy.	Miscellaneous.
6	13	10	9	2

DESIGNS.

Jewelry.	Silverware.	Horology.
7	11	3

TRADE MARKS.

Jewelry.	Silverware.	Horology.
2	1	2

The large number of patents on improvements in watches and optical goods, is a remarkable feature of the above. In stem winding and setting watches alone, seven patents were granted. Regarding optical goods, perhaps no manufacture in the line of small wares is at the present time commanding more inquiry and experiencing greater improvements. Of the thirteen patents, seven were on eyeglasses, three on spectacles, and two on opera glass holders.



*A Complete History of Watch and Clock Making in America.

[By Chas. S. Crossman.]

Number Forty-three.

Continued from page 24, April, 1890.

CLOCK MAKING:

CAPTAIN TIMOTHY CHENEY.

CAPTAIN TIMOTHY CHENEY was born in 1730 in the town of Manchester, Conn., where he spent all his life. He was notable as one of the first clockmakers in New England, and deserves special mention from the fact that his clocks had wooden movements. Some of his clocks are still running. The movements were enclosed, as were those made by his brother, Benjamin, in tall, carved cherry cases.

John Fitch, of steamboat fame, was an apprentice of Cheney's and received his first lesson in mechanics from him. The exact date at which Mr. Cheney commenced the business of clock making is not known. However, as Fitch was in his employ in 1763, it is probable that the business was continued from that date until the Revolution. This fact, it would seem, should silence the claim made by some that no clocks with wooden movements were constructed in America prior to 1790, when clocks with wooden movements began to be made in considerable quantities in Connecticut.

Upon the breaking out of the Revolution Mr. Cheney became captain of an infantry company and was for some time in the service; but General Washington being informed of his mechanical skill, directed him to return home for the purpose of manufacturing powder sieves for use in the army. In latter life Mr. Cheney gave up clock making and moved to a farm a mile north from his old home, where he built a saw and grist mill and the house which is still known as the Cheney Homestead. He died Sept. 27, 1795. The names of his descendants have become familiar to many in Connecticut in connection with silk manufacturing at South Manchester, Conn.

CALEB WHEATON, PROVIDENCE, R. I.

Caleb Wheaton was another of the early clockmakers of America, being born in Providence, R. I., in 1757, and dying there in 1822.

He was located on North Main street, where he made high case clocks, of good quality. The escapements were mostly dead beat, a rare thing in those early times. He commenced business about the year 1785 and continued in harness up to the time of his death when he was succeeded by his son. For a long time he had charge of the clock which was presented to the first Baptist church in America by Joseph Brown, Esq., in 1775. His son in speaking of his father, said: "He was very handy with the file," which generally meant a good mechanic in those days.

Mr. Wheaton was a drummer boy in the revolutionary army at the battle of Concord. He afterward became a Quaker, and, it is said, was always very reticent regarding his army experience. He was a vigorous anti-slavery man.

SAMUEL ROGERS.

Samuel Rogers was born in 1766, in the town of Marshfield, Mass., and was a direct descendant of John Rogers, the martyr of Smithfield. He afterwards moved to Plymouth, Mass., and in 1804 changed his residence to East Bridgewater, Mass., where he died in 1839. We do not think he served an apprenticeship. He was very ingenious. Among other things he invented the first machine for making tacks and nails by one operation. His head was full of inventions; it was said he tried everything but flying machines and perpetual motion. He finally died insane from over work and over study. Not much is known about his clocks. One of them that has been running nearly one hundred years is owned by Wales Rogers of East Bridgewater, Mass., and is a fair specimen of workmanship. It is now owned by his grandson Allan Rogers, of Gloucester, Mass., through whose kindness the writer was permitted to examine it. It is in the usual style of English verge escapement of ordinary size, all the parts being imported except the plates which are of silver and of his own make. The top plate is engraved "Samuel Rogers No. 1." The case is also of his make.

WILLIAM STILLMAN

Was born at Westerly, R. I., May 4th, 1767, and was raised on a farm. At the age of fourteen, while following the plow, he began to plan how to make a mechanical device to tell the time. There were but few clocks at that time, so the ambitious youth had to think for himself rather than copy from another. Despite the fact that his father tried to discourage him, he finally succeeded in making a wooden clock which kept time fairly well and struck the hours on a bottle. He apprenticed himself to a shoemaker. After working at this trade for two years, he gave it up and began to make wooden clocks. At the age of twenty-two he moved to Burlington, Conn., where he made brass clocks for three years, in the back part of his brother's blacksmith shop. Then he moved to Hopkington City, and later to Pawcatuck Bridge, both in Connecticut, where he continued to manufacture brass clocks until 1809. Business then being dull he turned his attention to the manufacture of cotton machinery, carrying on this business for many years.

He was also celebrated as a lock maker. It was said of him that he could make a lock that no person could unlock after the key had been given them until he had shown him the secret. His biography together with his poetical and prose writings (for he seems to have been an almost universal genius), were published in 1852.

JOSHUA WILDER, HINGHAM, MASS.

No doubt most of the older members of the craft have seen pictures of the country watch and clockmaker's shop of the last century. It was usually a small, one-story wooden building, with one or two windows and a door, and it had a small watch sign hung out to tell what the occupant was. Sometimes this unpretentious shop was also the abode of the clock or watchmaker's family. In the town of Hingham, Mass., there is such a shop which is preserved in its original form, and, if the expression is permitted, in all its "pristine glory." So far as the writer knows it is the only one of its kind at present in existence. It was built by Joshua Wilder, when he settled in the village as a clockmaker, soon after the Revolution. Where he served his apprenticeship does not appear, but he comes on the stage as a clockmaker at that time.

Mr. Wilder was successful as success was reckoned in those days, making and selling a good quality of high case clocks. After his death, he was succeeded by his son, Ezra Wilder, who has preserved every detail of the shop until the present time; he is a very old man and has long since given up clockmaking, but keeps the moulds and forge where his father moulded his plates and forged his steel parts. The bench and other internal arrangements are in their original state. The old shop is truly one of the landmarks of the locality, which is a New England hamlet, three miles from the railroad and not entirely imbued with the progressive spirit of the present century.

(*To be Continued.*)

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CLOCK DECORATION.

A BRIEF REVIEW OF THE ARTISTIC FEATURES OF CLOCKS FROM THEIR EARLIEST INTRODUCTION.

By Paul Tonnellier.

(*Commenced in the February Number.*)

PART IV.

LOUIS XV. AND LATER PERIODS.

THE REMARKABLE ROCOCO STYLE.

IF WE examine the best specimens of rococo, we cannot help looking upon them as the most elegant pieces to be seen. The Louis Quinze style is the only original one which has been devised since the Ogival was invented; and if the best productions of the latter have been inspired by a deep religious feeling, the most remarkable works of the rococo period, on the contrary are expressive of supreme elegance and refinement. One appeals to our highest feelings, and the other fully answers to our longing for luxury. Each one of them has well marked features of its own. All the other styles borrow something from the Greek; in them either the ensemble or the details reminds us of ancient works. Even when the decoration is apparently original, the general arrangement has been devised according to certain rules of symmetry invented at least twenty-four centuries ago. With the rococo, it is entirely different. We see no definite outlines, no apparent regularity in the grouping of the ornaments; all is abandoned to the artistic inspiration of the designer who needs to have a perfect delicacy of taste.

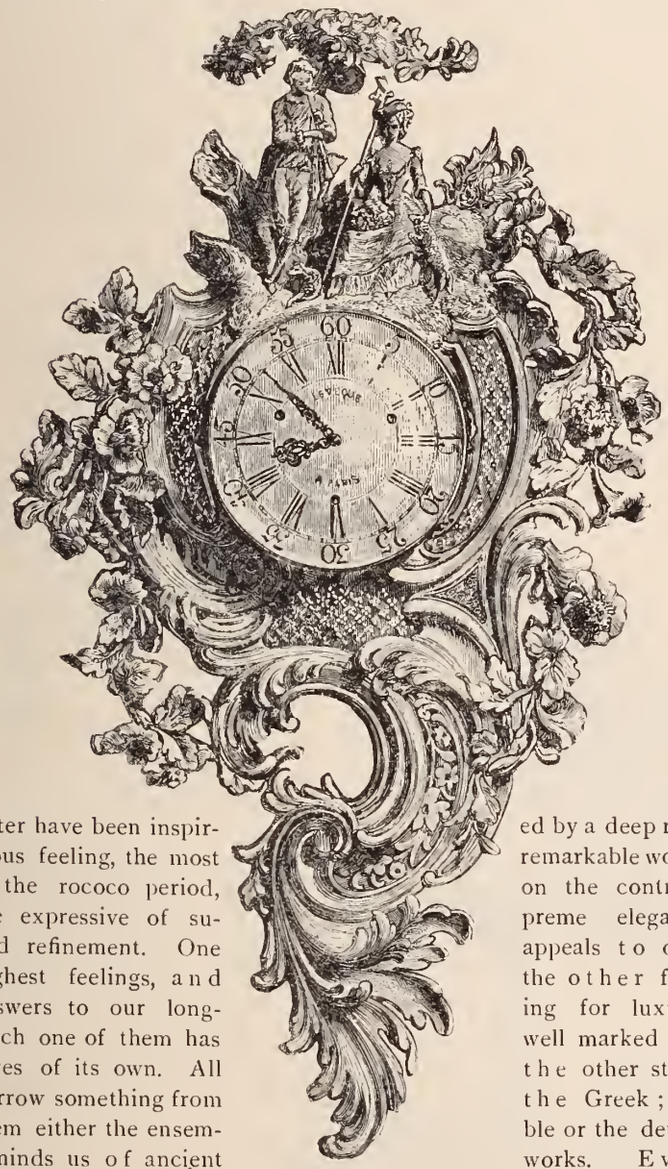


FIG. 21.

If I may be allowed to borrow a comparison from another branch of art, the designer in a Louis Quinze work, endeavors to suppress all admitted rules of symmetry, just as the composer, Chopin, has attempted in some of his pieces to break with all notions of time. Yet, in both cases, the laws of harmony are strictly observed. If, in their winding course, rococo ornaments appear to run freely in opposite directions, in fact, to produce the right effect, their different parts have to be well balanced. Although it would be almost impossible to indicate definite rules for that style, a careful study of a perfect Louis Quinze piece will disclose the reason of its elegance.

Of all articles, a clock, especially a cartel without stand, offers the greatest scope to an artist for decoration in rococo work, since there are no arbitrary rules to govern its shape, as in the case of vessels of whatever description. Our fig. 21 reproduces a lovely cartel in gilt brass, whose style exactly corresponds to what I have just said. This work evidently belongs to the last period of the Louis Quinze reign. Otherwise we should not see on this clock the graceful shepherd and the elegant shepherdess, who seem perfectly at home, and do not appear to have experienced any serious difficulty in climbing up there. In spite of the wonderful fancy displayed in the whole arrangement, the ensemble is so thoroughly harmonious that the two figures occupy exactly the place which they would have on a column or a rectangular stand. Although the sprigs of flowers might be considered as mere ornaments, their arrangement has been calculated so as to give to the piece symmetry as well as grace. The whole effect is absolutely charming.

QUAINT SUN DIAL.

Some time ago I came across a beautiful old engraving, which I believe to be very rare; and I thought that a reproduction of it might not be out of place in this serial. As shown in our fig. 22 (which is a faithful copy of it), the sun dial it represents must have been designed at the very beginning of the last century. Placed on a terrace, outside a building of the Louis XIV. period,

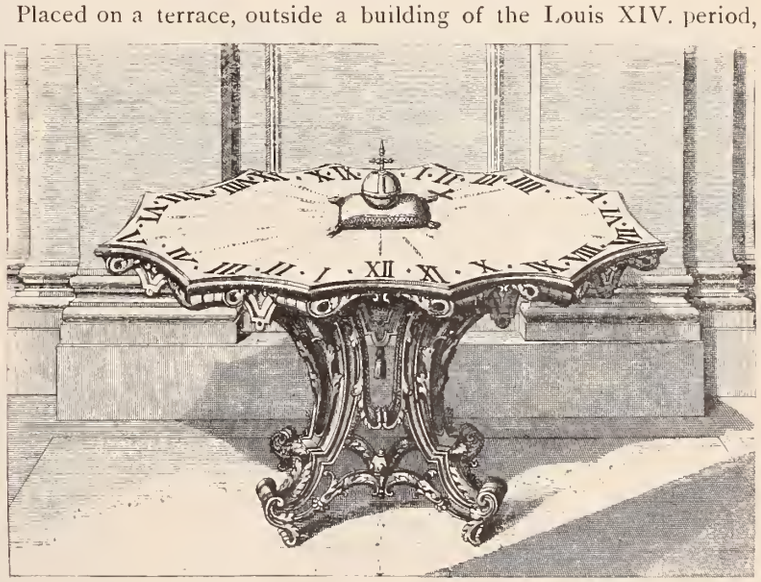


FIG. 22.

that time-shower, although it is made according to the most primary of horological principles (and how could it be otherwise?), is exceedingly elegant. It has the shape of a table, the lower parts of which are at once graceful and stately. The top, whose original outline exhibits twelve curves, shows more than the usual number of hour marks on a sun dial, a few of those in front being there simply to complete the general effect. Even the most trivial details

of the piece are pleasant to look at. The ball, surmounted with a cross is a nice finishing off on the pretty cushion.

THE VERNIS-MARTIN FAMILY.

Among the numerous artists who, during the reign of Louis XV., copied with success the Chinese and Japanese lacquer, the Martin family occupy a most prominent place. In fact, they managed to obtain such novel effects that their style soon became known all over Europe by the name of Vernis-Martin. The chief originality of these pieces consists in a striking contrast between the painting and its background, which is generally of a brown yellow (aventurine) or blue-lapis, or green-emerald. sprinkled with gold dust. Pretty love scenes and allegories were thus painted on walls, chests of drawers, chiffoniers, carriages, sedan chairs, sleds, and all kinds of other articles, large or small. An elegant run of chased gilt brass generally framed the panels, or different parts of a piece decorated in this style. It is much to be regretted that the dainty works done in this way should prove so very fragile. The comparatively few specimens, which have been preserved, can only be saved from irremediable deteroriation through the most watchful care. Lengthy exposure in a damp room of a museum, or of some abandoned mansion, must have proved destructive to a great many of them.

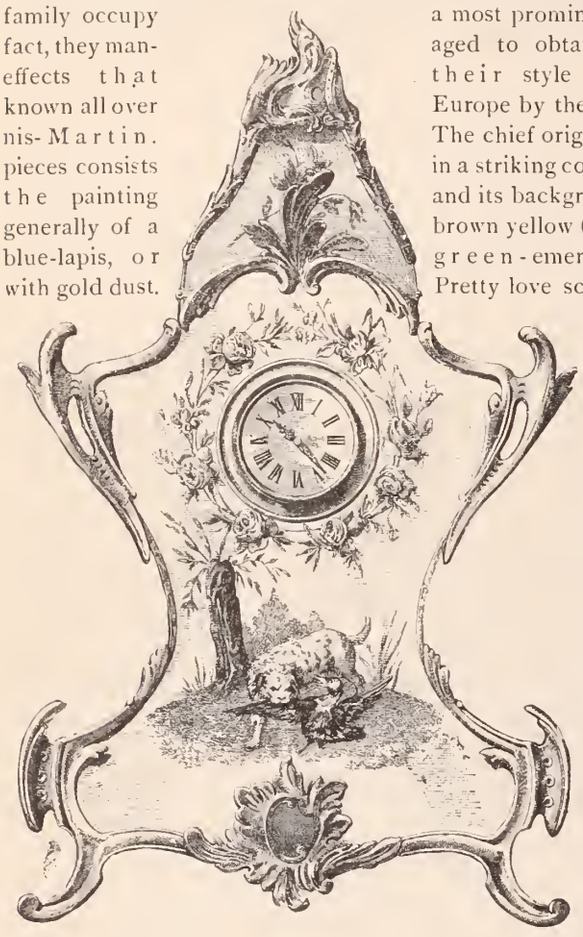


FIG. 23.

Our fig. 23 shows a clock painted *à la* Vernis-Martin. This pattern is at once elegant and simple. The outlines are gracefully curved, and the brass ornaments soberly managed. The shooting scene is very natural, and the garland of flowers surrounding the dial has a pretty effect. It is, altogether, a very neat Louis Quinze clock, and must be considered as one of the chief items in the Devrez collection.

LOUIS XVI. DECORATION.

This is not the place to examine the various claims of the eighteenth century's inventors, in the horological line. Thomas Tompion, Ellicott, Halley, George Graham, and, above all, Harrison in England; Julien Le Roi, Ferdinand Berthoud, Abraham Louis Brèguet (these two last of Switzerland), Lepante, Pierre Le Roi, and Antide Janvier, in France, have all, with more or less success, made important discoveries in the science of horology. King Louis XVI. himself, took a lively interest in these matters, and was a great admirer of all improvements in that line. We may, therefore, be somewhat surprised at the almost undue importance given to the outside decoration of clocks, at a time when the perfection of the inside works attracted so much attention I have read, with astonishment, in a book recently published, and sufficiently interesting as regards the mechanical part of the subject, that very little can be said about the ornaments of clocks, at the Louis XVI. period. Everybody knows, on the contrary, that the style of decoration was not only varied, but entirely different from the previous ones. Some were more elaborate than others, but all of them had a graceful originality.

FERTILE FANCY UNCURBED.

We may be wrong, after all, in supposing that the designers endeavored to draw all the attention on their side. Many of them may have simply imagined that nothing short of supreme elegance would do to shelter such remarkable work; and, accordingly they have strung up their fancy to the highest pitch. It carried them so far that, very often there is nothing in all the ornamental parts that brings you to the notion of time. Yet, every clock of that period has an artistic value, as regards the inside as well as the outside, and although some of them introduce the same details, they are always arranged in so many different ways that you can hardly recognize them under their numerous disguises.

Our fig. 24 shows a pretty pattern designed by Forty. It is a clock made of marble and gilt brass. A tiny serpent rolled in a distorted attitude around a conventional branch above a medallion, marks the time with his head turned towards the top part of the urn, which moves circularly. The two little beings who prop up the urn seem to remark with a deep surprise, that the lower part of their body has changed into a rounded ornament of no small importance. Everything in this work is well proportioned, and all the details from the delicate curling of the handles to the drooping garlands are thoroughly exquisite. The mouldings which adorn the top piece and those on the stand are also worthy of notice.

Clocks of this period showing one or two snakes, in various ways, are very numerous. The most remarkable one is that which belonged to Queen Marie Antoinette. It was reproduced in the December issue of the CIRCULAR, page 54.

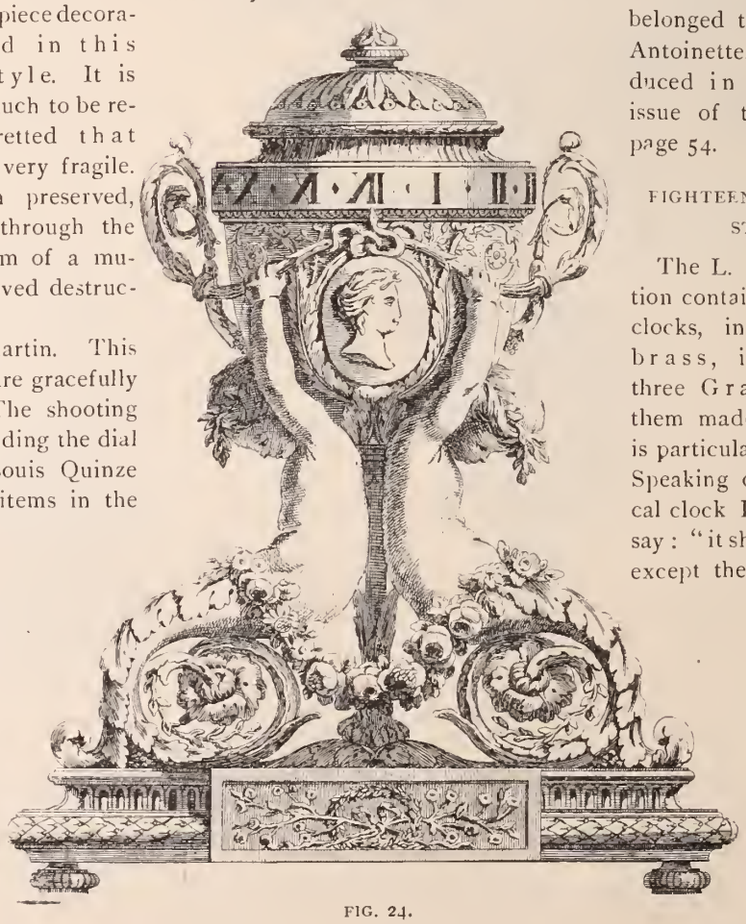


FIG. 24.

EIGHTEENTH CENTURY STYLE.

The L. Double collection contained two pretty clocks, in marble and brass, introducing the three Graces. One of them made by Falconet is particularly well known. Speaking of this historical clock Diderot used to say: "it shows everything except the time." That witticism has been often repeated by King Louis Philippe who is generally believed to be the author of it. Although it would be ridiculous to show ourselves over-prudish as regards works of the eighteenth century, when they are considered as pieces of curiosity meant to be preserved in special corners, on the other hand we can hardly

offer Falconet's clock as a model to be copied. An artist ought never to represent allegorical figures with the exact appearance of real ones. They should always have about them a kind of unearthly character, which no realistic touch, however slight, must be allowed to impair. For the above reasons I have selected for reproduction, in preference to the other ones exhibiting the same group, the clock of the Palais de Fontainebleau, shown in our fig. 25. It is an early specimen of the Louis XVI. style. On a pedestal at once simple and elegant, showing at each angle a console curling at its base into a volute, stand the three Graces, slightly covered with draperies and garlands of flowers. The pretty group serves as a support to a clock in the shape of an antique vase. A wide-awake little Cupid, gracefully seated on the top, holds downwards, at arm's length, an arrow pointing to the hour on the dial, which moves round. The ensemble is most satisfactory; and, although the figures are not wanting in life, yet they all preserve a thorough classical style.



FIG. 25.

A Cupid showing the time appears in many different clocks of that period. In the Double collection there is one seated on the top of an urn, and indicating with an arrow the days, marked around his uncomfortable seat; whereas the hour dial is placed on the pedestal, in the shape of a truncated Corinthian pillar. In another clock, known by the name of "*l'Offrande à l'amour*," we see a young nymph standing by a pillar and offering, with the most worshipful earnestness, a bouquet of roses to the god of love, seated at the top. Clouds partly surrounding it, and garlands of roses gracefully hanging from it, are well calculated to correct the severe effect of the rigid column.

(*To be Continued.*)

To Pivot the Staff, etc., of an American Watch.

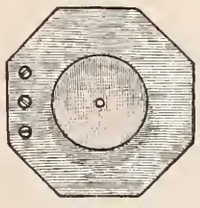
IT becomes necessary occasionally to pivot the staff of an American watch. It is not always expedient to draw its temper, and in such a case the following process had better be followed: The drill must be of the best of steel, made strong, so as to stand considerable pressure upon it, not pivoted but rounded ovally on the end, the edge sharp but not thin. When drilling, press hard but firmly and straight; work slowly, press the drill against the metal only in one direction while cutting, and have patience. The cutting edge, of course, must be as hard as it can be made. Many workmen use fluids of different kinds to assist the cutting of the drill, but their use cannot be approved. The latest idea of the kind is to keep the tool wet with petroleum (kerosene oil), in which is dissolved one half the amount of turpentine. Others recommend spirits of turpentine in which a lump of camphor gum is left, and to roughen the bottom of the hole with dilute nitric acid, first cleaning the oil, or the turpentine, before putting this on. Many other preparations are occasionally mentioned, but the good workman will be able to do all that is necessary and proper to be done without such helps.

It must be remarked however, in conclusion, that it is by no means necessary to drill without drawing the temper. Some staffs are soft enough to drill with but little trouble, while others are so hard that it would be almost impossible to drill them without drawing the temper. If drawing to a dark blue, a pivot carefully fitted, and the staff repolished equal to new, the job is in every respect as good as if drilled without drawing the temper, and very possibly an extra hard staff might split in drawing a pivot into it. In drawing the temper of a staff, the repairer must be careful not to heat other parts, such as the balance, roller table, jewels, balance spring, &c. They are easily damaged, but it is very seldom that a staff is injured by drawing its temper to a dark blue.

Fastening the Balance Spring in the Collet.

IN order to fasten the inner end of the balance spring in the collet, it is customary to fasten the latter in the arbor, so as to hold it firmly and conveniently, when pinning the spring. A great deal of attention, however, is necessary in this process, and a certain amount of practice is required in order to fasten the spring at once in a workmanlike manner, especially if the hole in it is too large in proportion to the breadth, which, as is well-known, occurs quite frequently. I have in my practice of many years, often had the occasion to learn over again the lesson that my fellow-workmen had pinned in obliquely the spring, and then ruined it by trying to bend it straight.

I became interested, therefore, when I found in *L'Union Horlogère*, the description of a highly simple arrangement, by which the spring is pinned in flat, while the process is so much facilitated, that it is even, with very little practice, not at all difficult to perform the job rapidly and well. Accompanying sketch represents the device, which can be made with every little trouble by every young watchmaker. It consists of a brass plate, about 3 millimeters thick, which is turned down so low around the edge that it has a circular-raised shoulder in the center, of about the size shown in the cut. The tool shown is octagon in shape, but any other shape answers just as well. A hole of suitable size is drilled in the center of the round shoulder, and furnished with a thread. Several differently-sized screws with flat heads are made for this device. As these screws are to be used for fastening the collet upon the shoulder of the plate, the screwhole is to be made as small as possible, so that the screws will also readily pass through collets with small holes.



When using the tool, the collet is laid upon the hole in the center of the circular-shoulder of the plate, and screwed tight with a screw with suitable size of head. It is now very easy to fasten the inner end of the balance spring into the collet. If further advantage is gained by this, the operator can lay the balance spring nice and flat, by keeping it truly parallel to the shoulder. It is well to have a few screw holes an one side, as shown in the cut, to accommodate the screws when not in use.—L., in *Deutsche Uhrmacher Zeitung*.

SATIN FINISH ON SILVER.—Satin finish is ordinarily produced by the use of the scratch-brush. On the large scale, the sand-blast is often employed. Small articles may have a fine dead-white appearance given them by heating them to a "cherry" redness, or dull red heat, and then allowing them to cool, when they are soaked in very diluted sulphuric acid solution, say about five parts of acid in one hundred parts of water. Leave them there for a couple of hours, dry and again heat, and pickle as before. They should be quite cold before putting them into the acid. Rinse in perfectly clean hot water, and dry in clean boxwood sawdust.

WATCH AND CLOCK ESCAPEMENTS.*

By Dudley W. Bradley.

(*Commenced in the February, 1890, Number.*)

THE DUPLEX escapement, fig. 14, was invented near the close of the 17th century. There exists a great deal of uncertainty as to who the inventor of this escapement really was. The idea, without doubt, originated from the escapement of Dr. Robert Hooke.

It was constructed in its present form by Pierre Le Roy, but his

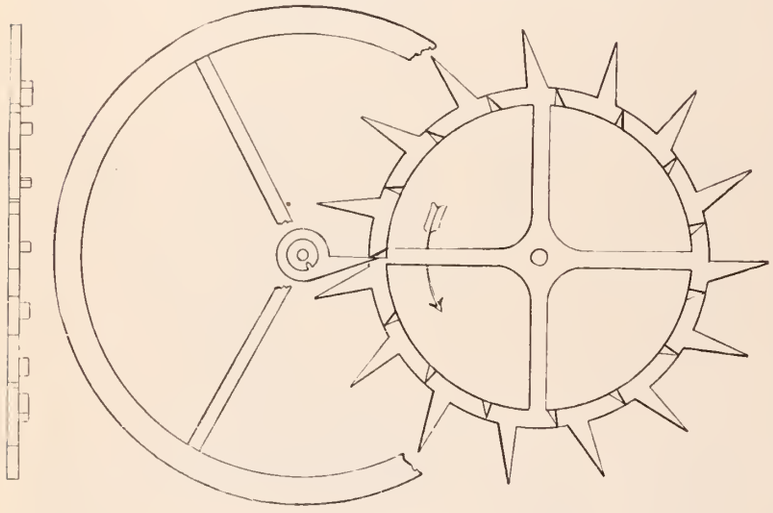


FIG. 14.

claim to its invention was disputed by Dutertre, another French watchmaker. It was introduced into England by Thomas Tyrer, after whom it was also called Tyrer's escapement. The escapement as at first constructed, had two escape wheels on the same staff or axis (whence its name), one of which was used for giving impulse, and the other, called the wheel of *arrête*, prevented it from running past the staff when the impulse tooth escaped from the pallet. The escape wheels were afterwards as now made, in one, having the impulse teeth projecting from the plane, as shown in the elevation. The duplex escapement is not well adapted for going barrel watches from its extreme sensibility to variations in the motive force, and it was, no doubt, from this cause that Le Roy and other French watchmakers quickly discarded it in favor of the cylinder escapement, although they made many attempts to neutralize the effects of this irregularity by making the ruby roller extremely large.

The train used in duplex watches is invariable the 18,000 as in the portable chronometer, to prevent setting, and the balance usually vibrates nearly a turn. Over banking cannot take place with this escapement as it does with the cylinder and lever; the effect of the balance vibrating too far will cause the escapement to "*run*" *i. e.*, two or more teeth will escape at one vibration, causing the watch to gain a few seconds, as is the case with the chronometer escapement.

Various methods were tried to prevent this running or tripping of the wheel. The old-fashioned plan was to fix a stud or pin on the balance staff just above the pallet, having a slot cut in it into which a pin fixed in the staff, projected, allowing it to move a quarter of a turn. This stud had a sort of pallet projecting from it, and, if the balance moved more than half a turn either way, this pallet came in contact with a banking stud or pin fixed in the plate.

Another ingenious plan was that of having a loop formed in the outer coil of the balance spring, which, if expanded too far by the extra extent of the vibration, came in contact with a pin in the arm of the balance, and thus controlled the vibration. But this loop in the spring was found to be very much in the way of the isochronous adjustment, since it prevented the length of the spring from being altered in the pinning in.

No modern duplex watches have any contrivance to prevent the running of the escapement, its regular performance being best ensured by careful wearing on the part of the person who carries it. It is on this account, and because of the delicacy of its parts, not well adapted for persons of very active habits, or for those who hunt, ride, etc, but in the hands of a careful wearer, it is capable of very good results, in fact, results as few lever watches would give.

The chronometer escapement, fig. 15, was invented by Pierre Le Roy about the year 1747. It was subsequently improved upon by Berthoud and by John Arnold and was perfected by Earnshaw. The first chronometer escapements had the passing or discharging spring fixed to the roller, but Arnold and Berthoud transferred it to the detent. The escapement invented by John Arnold is thus described in the specification of his patent, 1782: "The tooth of the balance wheel is an epicycloid that acts upon the pallet. The escape wheel rests on a single pin, whilst the balance is vibrating, until it is unlocked, to add new impulse to the balance."

It is to be observed that this escapement like the duplex, allows the impulse to be given only at alternate vibrations of the balance. A feature of the chronometer escapement that distinguishes it from the duplex or cylinder escapements is that its pallets need no oil. This property makes the escapement invaluable as a very disturbing influence is gotten rid of. By receiving impulse and unlocking at every other vibration only, the balance is thus more highly *detached* in the chronometer than in other detached escapements. This also is a distinct advantage.

For marine chronometers this escapement leaves but little to be desired, and even for pocket watches it performs well with careful wearing; but with rough usage, it is liable to set, and on this account many watchmakers hesitate to recommend it. To prevent this setting, some trains are made with 19,200 vibrations The chronometer escapement is much more costly than the lever, and is, on this account, applied only to high-priced watches, in which the buyer naturally resents any failure of action. Its use in pocket time-pieces is therefore always entirely confined to such as are used

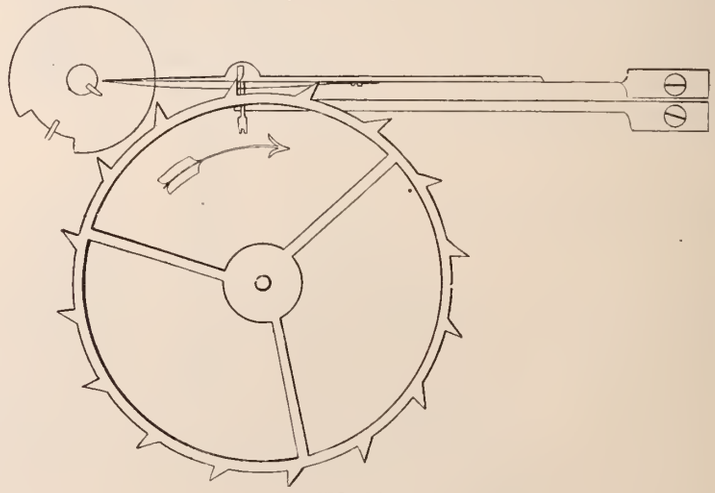


FIG. 15.

for scientific purposes, or by people who understand the nature of the escapement, and are prepared to exercise care in wearing the watch.

Another reason why watchmakers, as a rule, do not take kindly to the chronometer escapement for the pocket is that after the escapement is taken apart, the watch does not perform so accurately as before, because it is so much more delicate than the lever.

THE END.

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The Evolution of Jewelry.

A BRIEF SURVEY OF THE GOLDSMITH'S ART FROM THE RUDEST AGES.—DEVELOPMENT OF THE ART IN AMERICA.

By Elsie Bee.

THE GOLDSMITH'S trade was pre-ordained; it antedates the butcher and baker, and compared to it the tailor is a thing of yesterday. That the love of ornament is an elementary instinct all the philosophers agree. In Darwin's "Origin of Species" he presents some interesting and valuable collateral facts which cannot be gone into here. As far back as history traces, and as far back as the excavation of ruins and the unsealing of tombs go, and they extend into the mists of centuries, ornament has been found in a high state of refinement and technical excellence. From this we can infer how much farther back dated its rude beginnings. But the brotherhood of man is now pretty firmly established. The modern ethnographist goes among the dangers of the South Sea to study the pre-historic man, and he finds the cannibal's daughter adorning herself with feathers and berries, and smiling at her reflection in some placid, far away lagoon, the prototype of the Fifth avenue belle admiring herself for the New Year's ball in a Louis XVI. mirror. Between the two are practically a hundred centuries in a natural order of development.

The Bible furnishes us our earliest historic records. We are not out of Genesis before we learn of Isaac wooing Rebecca with a golden ear ring of half a shekel's weight, and bracelets for her hands of ten shekels' weight of gold.

It is a curious fact that the ear ring in every nation, every tribe appears to be the first piece of jewelry worn. The lobe of the ears seems to have appeared universally as a part of the body intended by nature to be decorated. This record is unbroken; the nose ring we have discarded.

When Jacob fled from Esau to Bethel and raised an altar there it is recorded that the people of that land gave to Jacob all their strange gods and the ear rings that were in their ears—which indicate how earnest was their sacrifice.

And again, the Lord through Ezekiel reminds the obstreperous children of Israel how he had decked them with ornaments, put bracelets on their hands, a chain on their necks, a jewel on their foreheads, ear rings in their ears and a crown upon their heads.

The Bible, in fact, is, in a sense, a compendium of jewelry. The Palais Royal, Bond street nor Union Square all together do not give greater evidence of its appreciation and value. Solomon's song flows with its sparkle and luxuriance. The Book of Revelations would serve for a catalogue of gems. And even Job, in the midst of poverty, can speak of ten precious onyx and sapphires.

The high priest's broideries were set with precious stones. The description of the sacerdotal garments is in sufficient detail to be given by a foreman to his workmen. The "tinkling ornaments" which from the Oriental customs of to-day appear to have been bangled anklets now worn in the East, indicate on our part a falling off in personal adornment from Biblical days.

Classical literature is alike rich in allusion. Juno wore ear rings. Penelope's necklace of gold and light amber is described by Homer. The ring of Polycrates has been celebrated in prose and verse and, by Schiller in a poem now classic. Pliny testifies as to the old Roman love of jewels and jewelry. "We drink," he says, "even out of cups that are masses of gems."

The excavations in Greece and the Troad have brought to light beautiful workmanship in gold and gems. The Egyptian mummies have carried their ornaments on their breasts for centuries for our curious eyes to see. The Castellani collection and the Cyprian collection in our own Metropolitan Museum, are eloquent of the love of adornment and of its successful gratification.

There is a touch of barbarism in the lavish use of gold, as shown in the Cyprian antiquities, which one scarcely expects to see in an age which produced the Egyptian scarabæi and the famous engraved gems descending from the days of Theodosius of Samos, the first engraver. In this beaten jewelry the gems are set en cabochon, for the first gem polishers date from many centuries since.

The natural love of adornment shows itself in painted skins and nose and ear jewels. Chains are emblems of dignity. Pharaoh distinguished Joseph by twining a chain about his neck. Rings are tokens of affection, faith and confidence. But jewelry otherwise makes a pretext.

The brooch finds its origin in the fibula, the bronze button used to confine the toga on the shoulders, and was borne by the Romans to the northern nations who adopted the Roman costume. The fibula has a large place in Anglo-Saxon and Frankish and Celtic jewelry. The engraving of every British jewelry discloses how quickly and with what artistic perception these rude nations seized and beautified these forms. The filigree works and the Celtic interlacing are of a high order of beauty.

But no age compares with the feudal and mediæval in extending the uses of jewelry, and, in fact, co-ordinating and reducing its wearing to a science. The *fermaie* or clasp for the mantle in point of adornment would compare with the breastplate of a Jewish high priest. The magnificence of Charlemagne's gem-laden clasp for the imperial mantle is a matter of history.

The ring had a liturgy almost of its own and a place in all the relations of life; ecclesiastical rings, wedding rings, mourning rings, rings of friendship, rings of country, rings for personal identification, rings to ward off diseases, for defense against invisible foes, rings with all manner of marvellous virtues, charmed rings take part in all the life of the period. Nuns who were forbidden to wear jewelry were yet allowed to wear rings; and the half mystical history of that period is full of interesting and personal incidents in which the ring figures.

One of the curious things of that day, which was in use much later and has recently been revived, although without its former significance, is the "gimnal ring." This was a ring of friendship and a lover's ring. It was made of three rings uniting to make one ring, and confined by a significant band. Writes one of the old poets:

> "Thou sendst to me a true love knot, but I
> Return a ring of gimnals, to imply
> Thy love had but one knot, mine a triple tie."

Another curious ornament of that time was the *enseigne*, which was a button on the hat that became one of the richest pieces of jewelry, and the collar or carcanet on which was primarily used to hang other pieces of jewelry. These other pieces were ostensibly for a religious or sanitary purpose, but we may suspect that really they ministered to the vanity, and were, in fact, articles of personal adornment.

Such were the pendants, pentacols, reliquaries and pomanders, as they were afterwards called. These almost always took religious forms. The reliquaries in which were enclosed the relics of saints, displayed emblems of the creation and resurrection, the sacrifice of Isaac, or were enclosed in jeweled skulls.

The pomander, which was used to carry perfumes as a preventive of disease and against infection, takes its name from the apple, which was one of the early forms used. But with the dawn of the brilliant *cinque-cento* period, they took the most diverse and capricious forms, lanterns, silver chandeliers, censors, cages, bears, but the favorite, most romantic design in an age that had become sentimental instead of religious, was the "Oiseaux de Chyfee," Venus birds, twin doves, in which the precious and health-giving substance was confined.

The pendants, which were also as charms, took the forms of sea horses, hunting scenes, hunting dogs and grotesque designs; the *enseignes* or hat ornaments displayed Hercules in battle, a charm against accident, and Perseus with Medusa's head, which was regarded as a protection against lightning.

The jewelry of the fifteenth century exhibits the greatest perfection of the jewelers' art—the art which Cellini has left as a standard for all time. At the present moment, when the revival of the forms of the Renaissance is so conspicuously prominent, we can have, without recourse to museums or old plates, an idea of its elegance, refinement, and of the overflowing play of fancy in its numberless and varied forms.

In the sixteenth and seventeenth centuries, the collars which had been used for hanging on masses of jewelry became resplendent in themselves. The carcanets, as they were called in Elizabethan days, were made of small attached plates beautifully wrought. And we find this season necklaces evidently modeled after this old form. The antique girdles now take new interest and culminated in Queen Elizabeth's magnificent stomacher, and which was afterwards seen in the magnificent costuming of Marie de Medici and Anne of Austria.

The luxurious period of the Grand Monarque and the extravagances of the days of Louis XV. are inevitably reflected in the jewelry of the period. The court of Charles II. was no whit behind. The Duke of Buckingham, dropping gems like dew from his coat at the French court, is merely an indication of the luxury of the day.

There is a correlation among the arts and the social status of any age. The refinements of Louis XVI. decoration is as marked in the ornaments of that day. The classicism of the Empire is reflected in the personal ornaments of the period. The clumsiness which came in with the German family that occupied the throne of England overcame the tendencies of the French classic revival, and despite the efforts of Adams and other forerunners in another department of decoration, this, united with the horror inspired by the French Revolution, obscured the beneficial effects of the classic revival, which was felt to no extent in England.

We can all recollect how feeble and clumsy was the jewelry that came down from the early part of this century and into the period of the war. Gold jewelry used to be estimated as in Biblical times by the shekels or the weight avoirdupois. Who cannot remember the massive and leaden-hued work in lava? In curiosity shops we still come across the *pietra dura*, the heavily mounted necklaces made up of Roman polaces in mosaics that women once actually wore about their necks as things of beauty. Florentine mosaics suitable for table tops and paper weights were once brought as jeweled trophies from Europe, and proudly displayed on neck and breasts. Malachite, which the Duc de Demidoff once recognized as the material of his mantelpieces, served in time its turn.

Large coarse cameos were counted as the only parure for matrons; seed pearls mounted in *tumuli* were the spoil of every bride: heavy pieces of blood red coral, with pendant grapes, the desire of every woman. Around his neck the butcher, the baker, the candlestick-maker and his female relations hung heavy gold chains, and the watering-place dandy of his day disported in a white duck suit and a chain like a halter. Bracelets were massive bands and rings weighty pieces of gold.

What became of all these there is little need to ask. Every such period brings its own destruction. Women and men of cultivation and refinement, repelled by the vulgarity of the display, declined to wear jewelry as they did furbelows. Then came the chaste lines of the Gabrielle, the princess dress, beloved of artists, which needs no outward decoration beyond the simple lace pin at the throat.

How general and complete was the renunciation of jewelry beyond the gems worn in the evening, the goldsmith well knows. The watch even was relegated to remote hiding places, and only a suspicion of gold discovered its whereabouts. This state of affairs lasted until the jewelers' art seemed to have come to its end.

At last help dawned from the quarter least expected. By happy thought the silversmiths began to make silver jewelry in choice artistic forms, and with such success that the very women who had abjured gold jewelry hastened to accept these pretty trifles. The subsequent rage for silver jewelry marks an epoch.

Do you remember, you goldsmiths, how you felt that your art had received its final blow? But at last you realized that this country had taken a long step ahead; that unique designs artistically treated were what people wanted; that there was something in gold jewelry beyond stars and bars; that the worth of the gold was as nothing compared to the amount of brains put into it.

Behold the result. No country to-day surpasses ours in the goldsmith's art. It is a treat to the eyes to look in a jeweler's window, to see the exquisite chasing, the beautiful forms, the marvellous enamels, to observe the stimulus that the bountiful realm of nature has given to thousands of eyes and hands in the production of new forms and tints.

It is a proud record, and another manifestation of it should be mentioned in the number of new semi-precious stones which the new era has produced, in our new feeling for color and its artistic combinations, no gem, diamond, sapphire, ruby, being considered too precious for its setting. Such are the beryls, topazes, the ruby spinelle, the cat's-eye, the moonstones, the tourmalines, the labradorite, which have given new interest and new stimulus to the most ancient of all the arts, that of the jeweler.

Influenza of Pearls and Turquoises.

AGED PEARLS SICKEN AND DIE.—HOW HOME-SICKNESS AFFECTS RUSSIAN TURQUOISES.—A PARISIAN EXPERT RECOUNTS SOME INTERESTING EXPERIENCES.

"INASMUCH as the Russain influenza, has been raging so disastrously on the continent of Europe," said a Parisian expert in precious stones the other day, "it is well to call attention to another influenza which attacks, not human beings, but precious pearls. According to many competent observers, this disease is, in reality, as epidemic as the other has recently been, and although its progress is very gradual it has nevertheless committed terrible ravages.

"Mme. de K., who is the possessor of a necklace of 188 pearls of perfectly uniform size, a circumstance which gives it an almost inestimable value, and even made the Empress Eugenie envy its owner, recounts the following story: About ten years ago she became, for the first time, aware of a mysterious disease in her pearls, and erroneously blamed the destroying effects to an accident. In society, at parties, at theaters, wherever she was most likely to see such jewels, she made inquiries of their owners and became aware of the fact that her necklace was not the only victim of the malady; titled ladies, high bourgeoises, amiable actresses, all confessed that they were about ready to don mourning for the lost beauty of valuable pearl jewelry, adorable bracelets, beloved trinkets—all that enlists the sympathies of handsome women.

"It is curious to watch the premonitory signs.

"I said in the opening sentence that the progress of the epidemic is slow, but its destructive issue appears to be inevitable. Finally the pearl, like the handsome wearer, when seized by anemia, loses its lustre, its "orient," its "water" enfeebles, the delicate reflexes of the iris, of purple, azure and emerald which sparkle upon its surface are lost, and it remains insensible to the light. One feels simply that it is passing into a state of inanitity, that it is dying. It appears that the animal gelatine, which unites the concentric and very compact layers, of which the pearl is formed, commences to dry up, to dessicate, leaving nothing but the calcareous carbonate—that is to say a species of lustreless chalk.

"It must be stated, however, that this contagion appears to affect only very old pearls, the centenarians, but these are precisely the jewels most cherished and sought after.

"What is to be done?

"Consult the physician of pearls and jewels—the lapidary.

"After diagnosing the case of the jewel in its last agonies, he will tell you that at the end of a century, the occult, the mysterious matter which imparts the lustre to the pearl, ceases to be effective. Next, this gelatinous portion, to which the calcareous part owes its cohesion, and its pearly lustre becomes enfeebled and volatilizes. The pearl is seized by decrepitude—by an agony—whereupon it dies. The Hindoos boast that they have discovered a means of restoration by inserting the poor stricken pearl in a living oyster, when its vitality is restored.

"A very singular circumstance in connection with these diseased pearls has been noticed. The experiment was tried of stringing in a necklace a recently fished pearl between two that were already smitten with disease. It was noticed, however, that the late emanation from old ocean was speedily seized with the influenza. The poor, young pearl became marked with livid spots, and its "orient" took a peevish and troubled aspect. It is dead at present. The necklace on which it was strung, was at the beginning of this century, valued at nearly one hundred thousand francs, while at present it is certainly not worth two thousand.

But, again, let our amiable readers take heart. The epidemic has smitten only those pearls which shed their lustre upon the white shoulders of the contemporaries of the revolutionary epoch, or which spanned the delicate throats of the marquises of the Regency and of Louis XVI.; it does not attack young pearls—except when they have been confined or placed together with centenarians at the bottom of strong boxes

"Just as with pearls, so turquoises become pale and die, at least the Muscovite kinds; those from Asia, Turkey, or Persia, appear to stand emigration better.

"On this subject Mr. Gresse, the well-known lessee of the Paris Opera, tells a charming Parisian story which might pass for a Slavonic legend. When he had in rehearsal a certain piece, the actors often received the friendly visit of a very lively and gifted comedienne. She owned an exquisite parure of magnificent turquoises of Russian origin. After a certain time the charming woman was disconsolate; her turquoises began to assume a greenish earthy tint; their polish altered, livid spots became visible; they had contracted the jaundice, as she herself said. One evening she confided the secret that almost broke her heart to a sister actress, who responded:

"'Do you know what ails your turquoises? They are home-sick; they remember their hyperborean country; they sigh for home. Do not think I am joking. Russian turquoises appear to suffer exile and bleach. I have heard that a sufficiently long sojourn in their native country will restore their hue, indeed, will make them brighter than they were before. They languish for want of the accustomed bracing air of Russia.'

"This was at the commencement of the year 1877. In the month of April of that year, the actress signed an engagement with one of the imperial theaters of St. Petersburg, and went to Russia. M. Gresse saw her again only recently, at one of the festivities of the Exposition.

"'By the way,' he said, after a pause in their conversation; 'what became of your turquoises; are they still suffering from home-sickness?'

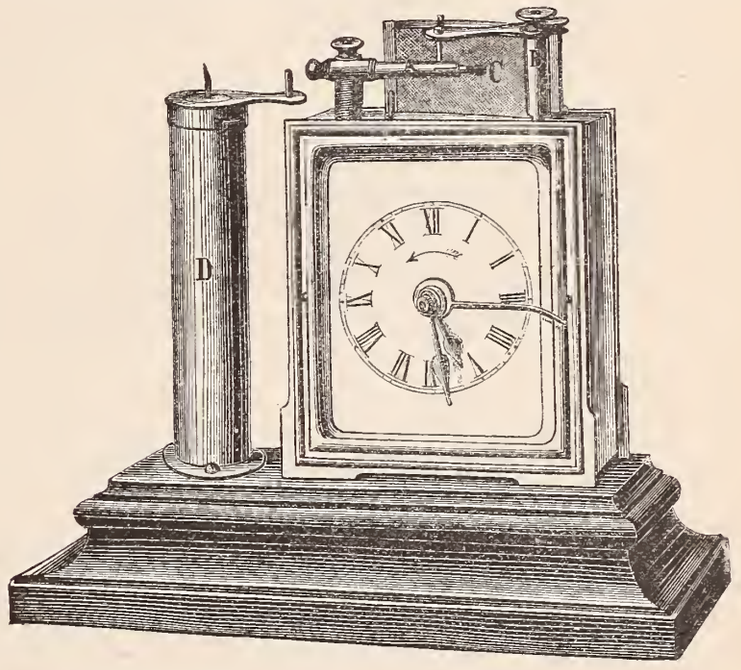
"'My turquoises? Their recovery is a miracle. Verily, it is a true miracle. The air of Russia has restored their primitive hue and lustre so well that I approach them only with a superstitious and reverential awe, and I have come to believe that they are alive.'

"The anecdote is simple, but it has in its favor the merit of being absolutely true in every particular, and for this reason the remedy can probably be depended on."

Alarm Clock, Lighting a Candle.

THE idea of combining the alarm clock with a contrivance that shall light a candle, so that the riser has light for opening his sleepy optics, is not new, as a number of constructions of this nature exist, at least in Europe. The principal requirements of such an apparatus are—a simple apparatus and a reliable performance, which, however, are generally most distinguished for their absence. It appears that a German watchmaker has finally supplied the "long-felt" want by the invention of a apparatus of this kind, and received an Imperial German patent for it. The following is an illustration and description.

The candle is lighted by a match C at the end of the lever A, the match is specially prepared, ignites readily, and burns for a length



of time. The watch lever A is unlocked during the sounding of the alarm, and a spring gives it one-half a turn to the left, whereby the match touches a frictioning surface lying at the back and visible in the illustration; it is ignited thereby and then completes its turn and applies itself to the candle, which is light thereby. In a condition of rest, the match lever lies with wound spring on the pin E of the unlocking B, visible to the right in the cut. When the alarm commences to rattle, the latter is by an eccentric lever on the mainspring barrel raised, the match lever leaves the reposing pin, and the ignition is accomplished in the manner described above.

The explanations accompanying the cut are not very explicit, but the ingenious American watchmaker will readily be able to supply the wanting parts.

Ready Electrical Contact.

A TEACHER of a high school in Germany, has invented and patented a simple apparatus by which mantel and suspension clocks can be used as alarm clocks, provided there is an electrical bell in the house to be connected with the clock; the arrangement may be used for every clock, the motion-work of which is high enough to permit the introduction of one or two alarm setting hands. It makes no difference how far from the clock the electrical arrangement has its sounding bell, and for this reason the device can be used for people who sleep in rooms far away, and have to be called up at an early hour in the morning.

The entire apparatus consists of two main parts, a pair of alarm set-hands, and a transposition which prevents the closing of the circuit oftener than once in twenty-four hours.

Fig. 1 shows one of the two alarm set-hands, both in an upper

and a lateral view ; fig. 2 shows the transposition in profile, while fig. 3 represents the entire arrangement in connection with the motion-works of a clock. The two alarm set-hands, *Z* and *Z'*, figs. 1 and 3 sit with their elastic linings each in brass canons *R* and *R'*; and may be revolved by gentle friction. The canon *R*, into which is pushed the lining of the larger hand *Z*, is somewhat larger than the canon *R'* for the shorter hand *Z'*, and the latter again is a little larger than the hour canon *S* of the clock-work. For this reason, the three canons *R*, *R'* and *S*, may be arranged over each other in such a manner that they do not touch each other mutually, as shown in fig.

FIG. 1.

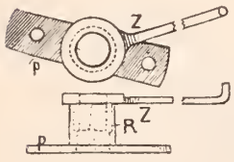
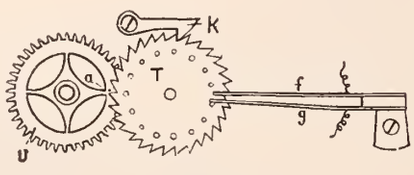


FIG. 2.



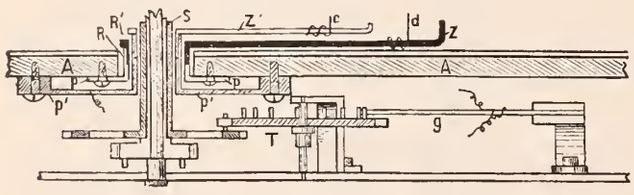


FIG. 3.

3. For the purpose of fastening the two canons *R*, *R'*, in the center of the dial concentrically to the head canon, each of them is provided with a brass rod *p*, *p'*, which is screwed to the back of the dial *A A*, fig. 3. The canon *R*, into which is pushed the long hand *Z*, must project only a little above the dial, while the canon *R'*, which serves for the reception of the shorter hand *Z'*, must be a little longer, so that the pair of hands can pass freely one above the other. The lower canon then projects still beyond the canon *R'*, so that the three hands are entirely separated from each other.

Near the point of each of the two hands is soldered a short, spiral spring *c* and *d* in such a manner that its free ends stand upward vertically to the plane of the dial. During the going of the clock, now, the hour hand passes over *c* and the minute hand over *d*, and at the moment when this occurs simultaneously with the two hands, the circuit is closed and the electricial bell sounds. If, for instance, the alarm is to be sounded at precisely 4:30 o'clock, the hand *Z'*, which comes into contact with the hour hand, is set a little before 4:30, the hand *Z*, however, which comes into contact with the minute hand is set to precisely 6. A few minutes before the appointed time, the hour hand is already in contact with *c*; the current, however, is closed only when also the minute hand comes into contact with *d*, which will occur exactly at 4:30. It is evident that the current would close every 12 hours, but it is prevented from doing so by the simple contrivance represented in figs. 2 and 3. This is arranged as follows : Upon the movement plate is fastened a star wheel *T* with an optional number of ratchet teeth and precisely one-half as many pins in such a manner that a pin *a* in the hour wheel *U*, at each revolution of the wheel pushes the star wheel *T* by one tooth further. Two feeble springs *f* and *g*, fastened to a bridge are during the revolution of the star wheel *T* by means of the pins of the latter, at each tooth alternately pressed together or loosened. The springs *f* and *g* are interposed in the circuit but insulated from the wheel *T*; for this reason, the closing of the current can take place only when the two springs *f* and *g* are in contact with each other, which is produced by the effectiveness of the transposition, only once in 24 hours. The click *K* serves for retaining the wheel *T* in the position imparted to it by the pin *a*. The course of the current is by the inclusion of the transposition and both alarm hands as follows: From the spring *g* to *f*; thence to hand *Z'*, to the rod of which one of the pole chains is fastened. The second pole chain is fastened to the rod of the hand *Z*, so that the two hands of the clock close the current by the contact of the two small, spiral springs *c* and *d*.

The bell sounds by this disposition of the apparatus exactly at the minute, but lasts only so long as contact of the minute hand with *d* lasts, or, if it is to continue for from 10 to 15 minutes the alarm hand *Z*, which comes into contact with the minute hand, may be omitted altogether. The current is then closed by the one contact of the hour hand at *c*, and lasts until the very slowly advancing hand has pushed the small spring *c*. If it makes no difference whether the electrical bell sounds every 12 hours, the transposition may be left out altogether, and the hands are directly intercalated into the current. As compared to similar devices, the new apparatus possesses the merits of great simplicity, cheapness and reliability, and its use would be preferable especially wherever electrical disposition is found, with which the clock can be connected.

The Use of Benzine for Watch Cleaning.

IN A period at the workbench extending over fifty years, says Oliver Hagen in an exchange, I have used benzine for the last fifteen—of course, the purest. A piece of brass dipped into it will not have a particle left on it one-half minute after, and if my experience in this line will be of any use, I am glad to offer it to my fellow-workmen.

On taking a watch down, removing all screws and cap jewels, I place all the parts in an alcohol glass one-half full of benzine ; I then put the cover on and let it soak for an hour or so ; two or three can thus be in operation at the same time. Then I turn all out into a small white porcelain plate, and with tweezers and a small, stumpy camel's hair brush, wash all the parts while covered with the benzine; on removing, dry off with an old fine cambric rag ; then place in alcohol and dry off with another clean rag ; this can all be done easily in ten minutes. I do not let it remain in the alcohol longer than I can help, putting the balance and pallets in last, and taking them out first. I very seldom find it necessary to use either peg or (watch) brush ; thus the gilding even on a cheap watch will never get rubbed off. Of course, you want to keep clean rags, especially for the alcohol. In my opinion, there are so few watches that will do without a little oil on the pallets, that it is best to put it on all. Often when I have left them over night without oil, they have stopped before morning, (of course, alcohol makes them very dry), and this has happened with good American watches too.

THE CLOCKS REVENGED.—There is an ebb in the affairs of clocks. Owing to a scarcity of water, the motive force of the pnuematic clocks in Paris has been diverted for other purposes, and from noon M., until half-past two o'clock A. M., the city is without time.

FRENCH EXPOSITION AT LONDON.—The CIRCULAR stated in one of its former issues that the French National Exposition will open at London, May 3, 1890. Group VIII, class 1, embraces bijouterie, jewelry, goldsmithing and horology, for which the following French officers have been chosen : President, G Sandoz; vice-president, M. Flamant; secretary, Durand Leriche.

STRASS OF FORMER YEARS.—There is a certain set of people who allege that the invention of paste strass, for imitation diamonds, is an achievement of the last twenty years. Alphonse Daudet, in his *Les Rois en Exil*, says that in 1857, at the death of the Duchess de Raguse, her jewels were sold. Among them figured a splendid *rivière* of diamonds, of an extraordinary size, which had always been the object of universal admiration. "Phancy the pheelinks" of everybody present at the auction, however, when the sworn expert declared that this *parure* was paste.



Jubilee Year.—This year, 1890, is the semi-anniversary of a discovery, which, starting from Dorpat has become property of the entire civilized and, indeed, uncivilized world, the Galvanoplastic art. It was first discovered in 1839, by Jacoby, professor of the Dorpat University, and afterward Fellow of the Imperial Academy of Sciences of St. Petersburg. A celebrated Swiss, de la Rive, used it first practically, for gilding and silvering in 1846. In the course of a half a century, this discovery has been so improved and perfected that it has now become an utterly indispensable auxilary for every trade using metal, as well as for others which use it only indirectly.

New Jewel.—A Mme. de K., of Paris, recently wore a very handsome stone-set ring, the central portion of which was a white substance. Guesses were rife as to what kind of a jewel it might be, until finally, one of her intimate friends, largely gifted with that passion for which the female sex is noted, namely, curiosity, made bold to inquire of her what new kind of jewel it might be. "Oh," the wearer said laughingly, "it is the first tooth of my first born boy. When it appeared in his baby jaw, I vowed that I would have it set in gold as soon as he shed it—and here it is."

Boodle.—The "vrai Parisien" possesses a goodly share of love for the filthy lucre, and he is still reckoning up how much the city of Paris has been benefitted by the recent Universal Exposition. An item in a recent issue of the *Le Petit Journal* states that it does not fall much short of $250,000,000. The people of the provinces of France, to the number of 5,000,000 have contributed $100,000,000, and the strangers, numbering 1,500,000, have left $150,000,000. Among the visitors were 380,000 English, 226,000 Belgians, 160,000 Germans, and 120,000 Americans. These are the factors on which the writer bases his calculations.

Nickel Steel.—A new steel—nickel steel—is attracting the attention of metallurgists as the result of a paper read at the Iron and Steel Institute in May last, by Jas. Riley of Glasgow. It is claimed that tests made with an alloy of 95.3 per cent. steel and 4.7 per cent. nickel showed an increase in breaking stress from 30 to 40.6 tons per square inch, and the limit of elasticity was raised from 16 to 28 tons. The hardness can be increased 20 per cent. Steel rich in nickel is practically non-corrodible, 25 per cent. of nickel increasing this quality in the proportion of 10 to 870. Some of the breaking strains are said to have reached 87 and even 95½ tons per square inch. The possibilities of this new alloy are exercising the nickel producers, especially the Canada Copper Co, who claim to have the best nickel mines outside of those in New Caledonia.

Era of Inventions.—Those readers of The Jewelers' Circular not yet fifty years of age have probably lived in the most important and intellectually progressive peroid of human history. Within this half century the following inventions and discoveries have either been placed before the world or elaborated: Ocean steamships, railways, street cars, telegraph lines, ocean cable, telephone, phonograph, photography, and a score of new methods of picture making, aneline colors, kerosene oil, electric light, steam fire-engines, anæsthetics and painless surgery, gun cotton, nitro-glycerine, dynamite, and a host of other explosives; aluminum, magnesium, and other new metals, electro-plating, spectrum analysis, and the spectroscope; andiphone, pnuematic tubes, electric motors, electric railways, electric bells, type-writers, cheap postal system, steam heating and hydraulic elevators, vestibule cars, cantilever bridges. These are only a few out of a multitude. All positive knowledge of the physical constitutions of the planetary and stellar worlds has also been attained within this peroid.

Diamond Mining.—The French consul at the Cape reports the following results of diamond mining:

	CARATS.	LIV. ST.
1883	2.312.234	2.359 466
1884	2.204.786	2.562.623
1885	2.287.261	2.221.676
1886	3.047.639	3.261.574
1887	3.646.889	4 933.582
1888	3.565.780	3.608.217

To the Clockmakers' Injury.—The Paris *Petit Journal* recently contained the following item, full of importance to clockmakers at large. "Yesterday, March 15, ten years ago, a few pneumatic clocks commenced their service for the first time in Paris. To-day, three arrondissements contain 9,000 of these pneumatic dials. The word *pendules* (clocks) is no longer fashionable. In five years more ten arrondissements will be canalized, and 30,000 people will have subscribed for dummies." This is certainly not to the advantage of clockmakers.

How Romantic.—A French exchange sometime ago, published the peregrinations of a valuable pearl, which, were of a very romantic nature. It belonged to Miss Stephenson "a rich young American," who had bought it for 6,000 francs. She lost it in the street a short time afterward, and a poor man, dying with hunger, found it and brought it home. Next morning he fell sick and his wife took it to a small jeweler, who thinking it was false gave 30 centimes for the gold setting. A few days afterward this jeweler sold it to another jeweler and then the gem began its journey from one shop to another, until finally it had come into the hands of the one who had sold it to the lady. Detectives at the time were rummaging his store for stolen articles, and thought they recognized the pearl as the eardrop of Miss Stephenson, who had advertised her loss in the city journals. The lady being sent for, and recognizing it the stone, detailed a detective to trace it to the finder. This took about a month, but finally he was found, at the time very sick in hospital.

New Almanac.—The matter of the old complex almanac of the Gregorian system with its mystifying and bewildering number of days for each month has been a fruitful source of confusion. The question how to devise a better system was recently agitated in France, and a prize offered for the best plan proposed. The successful author, Mr. Armelin, says that if the year be divided into four parts or seasons, the quotient will be 91 days and a fraction. The number of 91 being divisible by 7, gives for each trimestre an equal and whole number of weeks—exactly 13. This permits of having the trimestres equal, all commencing by a same day. These four trimestres giving only 364 days, the 365th day might be placed outside of both month and week, to be considered as a complementary, or extra day, and be made the New Year's day and marked as O. By this system, the month of 28 days would be suppressed, neither the 1st nor the 15th of every month would ever fall on a Sunday, the months would be equalized, and the years become uniform—a most excellent idea, worthy of adoption.

Inventions in Dispute.—It is a singular fact that great inventions have ever been a matter of dispute among nations. The invention of the telescope, the spectacle, the pendulum, the balance spring, art of printing, telegraph, telephone, etc., have all been claimed by different nations. The only sensible inventor appears to be Mr. Edison, who puts an efficient label, in the way of letters patent, on every one of his inventions. The latest claim to the watch being of French invention, is made by the *Revue Chronometrique.* "Without doubt," it says, "the large primitive steeple-clock was born in Germany, because Charles V., in 1370, ordered a German, Henri de Vic, to make a clock for the Palais tower. But in 1530, we find that Oronce Finée, a mathematician, professor at the college of France, made the plans and superintended the execution of the planetary clock, still preserved in the library of Sainte Geneviève. Still more, it was in France where the large steeple-clock dwindled into the watch shown in the Garnier collection," etc. Shades of Peter Henlein!



To Take Spots From Gilding.—Boil common alum in soft pure water, and immerse the article in the solution, or rub the spot with it, and dry with sawdust.

Polishing Agent.—Crocus, dried and powdered, when applied with chamois leather to nickel-plated goods, will restore their brilliancy without injuring their surface.

Varnish for Brass Instruments.—An excellent gold varnish for brass objects, surgical or optical instruments, etc., is prepared as follows: Gum lac, in grains, pulverized, 30 parts; dragon's blood, 1 part; red sanders wood, 1 part; pounded glass, 10 parts; strong alcohol, 600 parts; after sufficient maceration, filter. The powdered glass simply serves for accelerating the dissolving, by interposing between the particles of gum lac and opal.

General Directions for Bronzing.—The choice of bronze powders is of course determined by the degree of brilliancy you wish to obtain. The powder is mixed with strong gum water or isinglass, and laid on with a brush or pencil, and not so dry as to have still a certain clamminess; a piece of soft leather, wrapped round the finger, is dipped into the powder and rubbed over the work; when this has all been covered with the bronze, it must be left to dry, and the loose powder is then cleared away with a hair pencil.

Gilding and Silvering on Wood.—The wood is to be coated with size. To make this, boil half a pound of parchment shaving in three quarts of water, stirring constantly. This gives a clear solution of gelatine, which must be passed through a sieve. Paint over the wood with this, and, while still moist, apply gold or silver leaf, or Dutch metal. Much manual skill is necessary, and it is well to see the exact details practiced by a gilder. Wood may also be gilded by painting it with the mixture of bronze powder and copal varnish. Finally, gold paint may be bought, all ready for use, and this will probably give the most satisfaction.

To Remove Oil Spots from Marble.—Oil spots, if not too old, are easily removed from marble by repeatedly covering them with a cream of calcined magnesia and benzine, and brushing off the former after the dissipation of the latter. Another recipe reads as follows: Slaked lime is mixed with a strong soap solution, to the consistency of cream; this is placed upon the oil spot, and repeated until it has disappeared. In place of this mixture, another one may be used, consisting of an ox gall, 125 grains of soapmaker's waste lye and 62½ grams of turpentine, with pipe clay, to the consistency of dough.

Soldering a Jeweled Ring.—In order to prevent the bursting of the jewels of a ring, when soldering the latter for repairs, take a juicy potato, cut it into halves, make a hollow in both portions in which fit exactly that part of the ring with the jewels, leaving the portion to be soldered protruding. The jeweled portion, should be wrapped in fine silk paper. Bind up the closed potato with binding-wire. Now, solder with easily-flowing gold solder, not upon a coal, but by holding the potato in the hand. Another good way to do the same job is to fill a small crucible with wet sand, bury that jeweled part of the ring in the sand and then solder.

To Mend Saws—When the saw has been dressed for the silver solder, take a clean piece of borax, wet it, and rub it on the part of the saw to be joined. Then pulverize a little of the borax, and sprinkle it on the solder, first wetting the same; place this between the ends of the saw, and sprinkle a little borax on the top of the saw. Now heat the tongs to a cherry red, and clamp them on the saw for one minute, then pour on a little water, and take the tongs off.

Silver From Waste Products.—The refuse is to be mixed with an equal quantity of charcoal, placed in a crucible, and subjected to a bright red heat, and in a short time a silver button will be found at the bottom. Carbonate of soda is another good flux.

Black Varnish for Iron.—Asphaltum, 1 pound; lamp-black, ¼ pound; resin, ½ pound; spirits of turpentine, 1 quart; linseed oil, just sufficient to moisten the lamp-black with, before mixing it with the other ingredients. Apply with a camel's hair brush.

To Clean Zinc Articles.—In order to clean articles of zinc, stir ordinary rye bran into a paste with boiling water, and add a handful of silver sand and a little vitriol. Rub the article with this paste, rinse with water, and dry and rub with a cloth, when it will be polished.

The Collet.—The balance spring collet often gives trouble, owing to bad fitting and want of freedom of the cock and screw-heads of the index piece. I usually put my watches in beat by moving the collet with a fine screw-driver or drill in the slot, without shifting the stud out of the cock, resting the cock on the board paper, and simply drawing the balance a sufficient distance to get at the collet. I find that out of beat is a greater source of stoppage than anything else, and suppose the trouble and danger attending frequent removal of the spring and balance the reason it is neglected, and devised this plan to save trouble, and insure accuracy of beat.

To Render Plaster Casts Water Proof.—This process involves the use of a bath of potash water-gloss (silicate of potassium), by which the gypsum is converted into calcium silicate— a very durable compound. This reaction takes place promptly and the immersion needs not be continued for more than a few minutes, or the solution may be applied with a brush, or in the form of a spray. The surface quickly assumes a smooth, dense appearance, and, when dry, acquires considerable hardness. They should then be coated with an alcoholic solution of soap, which gives the surface a shining, lustrous appearance, and renders it impervious to moisture, so that the objects may be washed occasionally.

Screwed Jeweling.—The screwed jeweling of a watch may be improved in such a way as to make it much less liable to failure. There is not the slightest necessity for counter-sinking the screws in the upper plate; they might, without detriment to their functions, have flat heads rounded at the top, as they only serve to hold the jewel down in its place, thereby reserving the whole thickness of the plate for the hold of the screws. The jewel setting might be dotted as usual, so as to have it always in the same place in its sink, which is not without importance; and if it should be thought necessary to insure this position of the jewel, even against careless repairers, who might not pay any attention to the dotting, this might be easily attained by drilling a very small hole in the bottom of the counter-sink, into which a pin might be driven, and for the reception of which the jewel setting ought to have a small groove.

To Polish Gold Articles.—Eighteen karat articles and upwards from *bright alloys*, will present a bright, mirror-like appearance by well polishing all over, inside and out, with pumice and emery, then with oil and rotten-stone, and finally finishing upon the buff with a little rouge of the best quality, and a touch or two of grease. Work high in quality finished in this manner, requires no gilding or coloring to put a superior surface to it; and when it is well washed out with soap in a hot solution of potash or soda, it looks very beautiful and rich. The bright alloy for 18 karats is composed as follows: Gold, fine, 15 dwts. 3 grains; silver, 2 dwts. 21 grains; copper wire, 3 dwts. Add 2 grains of copper per ounce for loss in melting. The two grains of copper added for melting loss will be found to be an advantage, since it keeps the alloy more uniform as to its original weight, and the cost per ounce is more certain and regular.

[*Journal Suisse D'Horlogerie.*]

Extract from the Tables contained in the Report of Colonel Gautier, Director of the Observatory, Geneva, on the Rate of Watches for 1889.

Number of Watch at the Observatory.	No. of the Watch.	TEST. I Mean Daily Variation.	TEST. II. Mean Variationforwhole Period.	TEST. III. Error of Compensation,	Total of Points, 240,0	Name of Manufacturer.	Name of Adjuster.	Escapement.	Hairspring.	Other Details of Construction.	Awards.
		s	s	s							
419	81255	±0,23	±0,65	±0,018	227,7	Patek, Philippe & Co.	J. Romieux.	Anchor	Steel.		1st Prize.
433	13118	0,27	0,65	0,026	225,0	Zentler Bros.	W. Beaufrère.	"	"		"
146	13023	0,20	0,72	0 041	224,0	"	"	"	"		"
441	9468	0,27	0,76	0,021	223,1	F. Piguet & Bachmann.	Favre-Rochat.	"	Palladium.		"
251	1755	0,39	0,45	0,027	216,5	Geneva Non-Magnetic Watch Co.	Al. Favre.	"	"	Paillard's Bal.	2d Prize.
307	34120	0,24	1,22	0,012	213,2	Rizzoli.	A. Savoye.	"	"		"
422	81248	0,29	0,86	0,029	212,4	Patek, Philippe & Co.	W. Beaufrère.	"	Steel.		"
369	34397	0,34	0,52	0,044	211,9	Rizzoli,	A. Montchal.	"			"
1	13445	0,20	1 12	0,037	210,0	J. E. Dufour & Co.	Adrian Goy.	Detent	Palladium-iridium	Goy's H'rspring	"
72	12736	0,19	1,05	0,058	203,7	Zentler Bros.	W. Beaufrère.	Anchor	Steel.		3d Prize.
73	13030	0,20	1,22	0,043	203,0	"	"	"	"	Paillard's Bal.	"
230	55780	0,30	1,24	0,018	201,4	Geneva Non-Magnetic Watch Co.	M. Favre fils.	"	Palladium.		"
350	71536	0,35	0,62	0,059	199,0	Patek, Philippe & Co.	J. Bomineux.	"	Steel.		Hon. Men.
448	13024	0,21	1,06	0,062	198,6	Zentler Bros.	W. Beaufrère.	"	"		"
456	83868	0,17	1,12	0,068	198,5	Patek, Philippe & Co.	A. Hoffer.	"	"		"
242	57548	0,24	1,33	0,033	198,3	F. Bronn.	A. Borel.	"	"		"
145	12881	0,21	1,49	0,031	196,9	Zentler Bros.	W. Beaufrère.	"	"		"
14	81207	0,29	1,48	0,011	196,6	Patek, Philippe & Co.	"	"	"		"
290	1750	0,27	0,99	0,056	196,4	Geneva Non-Magnetic Watch Co.	Al. Favre.	"	Palladium.	"	"
340	1752	0,46	0,89	0,016	195,1	"	"	"	"	"	"
186	13031	0,27	1,14	0,047	194,9	Zentler Bros.	W. Beaufrère.	"	Steel.		"
193	76829	0,29	0,91	0,060	194,9	Patek, Philippe & Co.	J. Rambal.	"	"		"
292	19086	0,24	0,88	0,086	189,8	H. R. Ekegrèn.	H. R. Ekegrèn	"	"		"
471	1754	0,42	1,13	0,018	189,8	Geneva Non-Magnetic Watch Co.	Al. Favre.	"	Palladium.	"	"
420	77433	0,20	1,50	0,049	188,8	Patek, Philippe & Co	W. Beaufrère.	"	Steel.		"
403	13115	0,26	1,07	0,068	188,5	Zentler Bros.	"	"	"		"
90	81251	0,27	1,24	0,053	187,9	Patek, Philippe & Co.	A. Hoffer.	"	"		"
378	19099	0,30	1,15	0,053	187,5	H. R. Ekegrèn.	H. R. Ekegrèn	"	"		"
404	1768	0,20	1,18	0,078	187,1	Geneva Non-Magnetic Watch Co.	Al. Favre.	"	Palladium.	"	"
311	18799	0,34	1,49	0,025	182,6	H. R. Ekegrèn.	H. R. Ekegrèn.	"	Steel.		"
377	18915	0,44	0,53	0,076	182,1	"	"	"	"		"
431	13116	0,27	1,33	0,058	181,8	Zentler Bros.	W. Beaufrère.	"	"		"
457	19100	0,28	1,30	0,064	178,7	H. R. Ekegrèn.	G.M.Grandjean	"	"		Mention.
435	13120	0,54	1.01	0,018	178,6	Zentler Bros.	W. Beaufrère.	"	"		"
185	12879	0,28	1,19	0,074	178,1	"	"	"	"		"
341	56810	0,33	0,57	0,111	177,7	Geneva Non-Magnetic Watch Co.	Al. Favre.	"	Palladium.	"	"
231	1780	0,49	0,83	0,048	177,5	"	"	"	"	"	"
351	71545	0,29	0,66	0,117	176,4	Patek, Philippe & Co.	W. Beaufrère.	"	Steel.		"
4	56828	0,41	0,82	0,074	175,5	Geneva Non-Magnetic Watch Co.	M. Favre.	"	Palladium.	"	"
312	55782	0,53	0,95	0,032	175,3	"	Al. Favre.	"	"		"
455	83867	0,23	1,50	0,068	175,3	Patek, Philippe & Co.	A. Hoffer.	"	Steel.		"
111	81218	0 23	1,66	0,057	174,4	"	"	"	"		"
241	2071	0,37	1,27	0,051	174,4	A. Pavid.	A. Pavid.	"	"		"
426	81769	0,29	1.10	0,087	173,8	Patek, Philippe & Co.	W. Beaufrère.	"	"		"
281	55781	0,31	1,35	0,063	173,2	Geneva Non-Magnetic Watch Co.	Al. Favre.	"	Palladium.	"	"
50	55818	0,36	1,12	0,071	171,7	"	"	"	"	"	"
316	1770	0,43	1,47	0,025	171,4	"	"	"	"	"	"
432	13117	0,24	1,45	0,078	171,0	Zentler Bros.	W. Beaufrère.	"	Steel.		"
294	34442	0,28	1,74	0,045	170,6	Rizzoli.	A. Montchal.	"	"		"
449	71546	0,45	1,46	0,022	170,6	Patek, Philippe & Co.	W. Beaufrère.	"	"		"
183	71537	0,30	0,92	0,108	169,2	"	J. Romieux.	"	"		"
310	76128	0,29	1,66	0,057	166,4	———	A. Hoffer.	"	"		"
107	72578	0,43	1,31	0,048	166,3	Patek, Philippe & Co.	J. Romieux.	"	"		"
213	81223	0,33	0,85	0,118	163,0	"	W. Beaufrère.	"	"		"
282	9190	0,23	1,14	0,122	162,7	Piquet & Bachmann.	Faxre-Rochat.	"	Palladium.		"
267	12198	0,29	1,36	0,090	161,9	Zentler Bros.	W. Beaufrère,	"	Steel.		"
309	81220	0,29	1,47	0,082	161,5	Patek, Philippe & Co.	J. Cordier.	"	"		"
215	40	0,37	1,64	0,048	161,1	Ernest Jaccard.	E. Jaccard.	Detent	2 Theoret'l curves		"
368	34444	0,19	2,64	0,018	160,1	Rizzoli.	A. Montchal.	Anchor	Steel.		"
Mean of 5 watches		0,214	0,94	0,046	210,858	Zentler Bros.	W. Beaufrère.	"	"		Prize.

The Chicago Horological Institute.

THIS FLOURISHING INSTITUTION has completely outgrown its quarters in the Owings Building, and on May 1st sought more spacious in the Monon Block, No. 320 Dearborn Street. Here the management will have ample room to accommodate their rapidly growing classes. The main work-room is 70 feet long, and is well lighted throughout, the fittings being of marble and antique oak, with crystal glass and brass trimmings. Each bench is provided with an incandescent electric light, while in point of minor conveniences nothing is lacking for the students' comfort that ingenuity can devise or money procure. Ventilators of the latest construction keep the air pure and wholesome. In point of tools and general equipment the school is complete, and with doubled capacity and additions to its already efficient corps of instructors the institution has a bright future before it.

In one of our former editions we gave our readers a general outline of the growth of this school up to that time, but owing to its still further success and to our interest in seeing such schools reach their highest efficiency, we again invite attention to it, knowing that all our readers, particularly those who have sons they think of sending away to school for their watch making instruction, will be inter

ested in knowing how they teach the art at this school. They now employ five instructors for the different departments, as follows: For the watch making department there are three instructors of the highest character, and for the engraving and designing department, of which they make a specialty, they have a professor of unexceptional ability. They have spared no expense to get the best man for the place that could be had, as it has always been the aim of the Institute to have the best talent that could be had regardless of what it cost, realizing on the start that to make the school a success, it must be unexcelled in equipment and instruction.



URBAN W. FRINK.

A very valuable department has recently been added, that of jewel making, where the students take the stones in the rough and turn them out beautifully finished jewels. This department is in charge of an old and expert jewel maker, who learned his trade in Coventry, England, and has spent his life in this branch alone.

One of Mr. Frink's ideas is to publish monthly, for the benefit of the students, a small journal, called *The Watchmaker*, which well serves the purpose for which it was established, *i.e.*, to give the young men in the school a medium through which they can always know of each other's whereabouts years after they have left the school. It is handsomely gotten up and is keeping pace with the growth and popularity of the institute.

In view of the approaching "World's Fair" to be held in that city, Mr. Frink has hit upon a capital idea. He has decided to offer prizes, aggregating one thousand dollars, for the best specimens of work done by the students in the institute prior to the time of the fair. These prizes will be competed for only by students of the school, and will no doubt stimulate them to do their best, as the successful competitors will gain a reputation which will mean large salaries and first-class positions. We hope to give our readers the terms of competition in some future number, and after the fair has been held, the names of the prize winners.

There are now about sixty students in attendance, and the future of the school seems to be assured. Its success is due almost entirely to the enterprise and sound business policy of Mr. Urban W. Frink, the president of the institute, whose portrait we take pleasure in presenting to our readers this month. Through his indefatiguable efforts and push he is placing it in the front ranks of the horological schools of the world. On January first, he gave up all other business and entered the institute to give it his whole time and attention. His whole heart is in the work of elevating the standard of watch repairing, and with ample means at his command there is no reason why he should not reach the goal he seeks.

HEROIC.

Dolly Feeble—Aw, what's the mattah, me deah fellah? Y' appeah awfully excited.

Gussie Silley—Just pwewented aw fellah from having his bwains blown out.

Dolly Feeble—How, me bwave boy?

Gussie Silley—Why—aw—beastly man up the street said if I didn't give him me—aw—watch he'd blow me bwains out, and I aw—gave him me watch.—*From Lippincott's Magazine for April.*

Bric-a-Brac Corner.

Some faces have a very striking appearance, and this is particularly true of a clock.

"Pray, how are diamonds produced?"
A lady asked a clerk,
To whom she had been introduced
While he was at his work.
"They're made by trick," the clerk replied,
"Among our theorems,
I'm sure it cannot be denied
That they are strata-gems!"

It is said that speech is silvern and silence is golden, but all the clatter and bombast about the World's Fair seemed to be Platt-inum.

The most costly ring in America was the Tweed Ring.

Mrs. Bilsdoo—I do so like *repoussé* in the Renaissance style.

Mrs. Bullion—Yes, it is very nice; but I prefer *poisson* in the New Hampshire style.

Lottie (in jewelry store to jeweler)—You say this watch is not reliable, and that its escapement will always be getting out of order. Well—

Hattie—Get a watch without an escapement, Lottie.

"Why do we call a handcuff a bracelet?" asked the commissioner of an Irish recruit at a recent police examination.

"Faith, bekase it is intended for ARRIST," replied the applicant, and he got the position at once.

Detectives are generally employed on "watch" cases.

I gave my girl an onyx ring
Which filled her with delight,
She looked upon it wondering,
Her eyes with radiance bright.
"It is a charming gift," said she,
"The gem is well selected,
Not only is it fair to see
But also onyx-pected!"

THE WATCH ON THE RHINE.

I had heard so many stories of the wonders and the glories
Which history had given to the river of the vine,
That my brain was full of fancies interwoven with romances,
Connected with that thrilling song—The Watch Upon the Rhine.

So one summer I departed, cheerful, happy and light-hearted,
For the land where poets tell us Nature's beauties are divine;
And I took my new stem winder, thinking that I might feel kinder
Lonely if I didn't carry my own watch upon the Rhine.

And it wasn't any wonder, that in fourteen days and under
I had reached the shores of Holland, and had sampled German wine
In such copious libations that I'd frequent altercations
With the guardian of the peace—that is, the *watch* upon the Rhine

Once, and happily once only, that policeman grim and lonely
Hauled me up before the Mayor, who imposed a little fine;
And he stated pretty clearly that he'd deal with me severely
If my future P's and Q's I didn't watch upon the Rhine.

But one evening I was roaming through the sweet, romantic gloaming,
Which in certain lucid moments is exactly in my line;
When a footpad, quick and clever, undertook to nimbly sever
My responsible connection with my watch upon the Rhine!

JOHN S. GREY.

TRADE GOSSIP.

—On March 1, J. Dorenfield, succeeded the firm of Rugely & Dorenfield, Belton, Texas.

—H. Tissot, manufacturer of watchcases, has moved his office from 15 to 51 and 53 Maiden Lane, New York.

—Ludwig Hirsch, of Koch & Dreyfus, 22 John street, New York, left for Europe on the *Etruria*, April 26th to purchase a stock of diamonds and fancy stones.

—Wm L. Decker, of Cattelle & Decker, started last week on his western and southern trip, to be gone for two months or thereabouts. He carries numerous fine, new designs in sterling silver novelties.

—Wm. Park, 26 John St., is recognized by the trade as the foremost artist in stone seal engraving, and, in fact, in engraving of all kinds on stone. Mr. Park is training two of his sons to be assistants in the same business with him.

--We have received a notice from Nicholas Muller's Sons, that Otto Muller is no longer in their employ. This firm, among the leading manufacturers of bronzes, lamps and sideboard ornaments, continue their business on the same large scale at 117 Chambers St., as formerly.

—J. L. Hutchinson, proprietor of Hutchinson's School for Watchmakers, La Porte, Ind., has issued a novel circular in the form of a map of La Porte, giving the location of his school. At the top of the sheet is the large cut of a Hampden watch escapement constructed by a pupil in the school.

—On April 28, George W. Parks, the popular manager of the Sterling Co.'s New York office, left on his semi-annual trip of four weeks through the principal cities in the west, in the interest of his company. He takes with him a seemingly indefinite number of new patterns in sterling silver small wares, all showing some point of originality and beauty.

—Frank Mauser & Co., No. Attleboro, Mass., have been showing this spring, an exceedingly meritorious line of goods in repousse and etched work, in new and original designs. They are constantly enlarging their line and are making preparations to outdo themselves this fall, after their removal to New York, which will probably take place about midsummer.

—The Essex Watch Case Co., 47-51 Chestnut St., Newark, N.J., are gradually increasing their facilities in their new and greatly enlarged quarters, and have their hands full to execute the orders they receive for their well known "Essex," "Columbia" and "Derby" filled cases, names which are now accepted everywhere as a guarantee of quality. They are turning out about sixty cases per day.

—On April 1, the co-partnership of Ferd. Fuchs & Bro., 136-140 West 23rd street, New York, was dissolved by mutual consent Ferdinand Fuchs retiring. Rudolph Fuchs and Geo. B. Beiderhase continue the business under the name of Fuchs & Beiderhase, and will undoubtedly maintain the reputation of the old house, as manufacturers of an attractive line of silver novelties and gold and silver headed canes and umbrellas.

—The Pairpoint M'f'g Co., New Bedford, Mass., illustrate in this issue a new pattern of their hollow-handled knives, called the "Garland," and matching other fancy pieces of this pattern in flat ware. These goods are now in great demand, the factory being pushed to supply them as also the many novelties in rich decorated glassware, with tasteful and original mountings, in the production of which the Pairpoint Co., are acknowledged to excel. They have just mailed to the trade a circular showing some of their newest designs in this popular ware.

—The Waltham Watch Tool Company, Waltham, Mass., was organized as a corporation on Monday evening, March 31st, with a capital of $25,000. A number of the leading business men of Springfield, Mass., are among the stockholders. The officers chosen at the organization were as follows: president, Charles E. Van Norman; vice-president, W. E. Wright; treasurer and clerk, S. A. Chamberlain; directors, W. E. Wright, Albert E. Smith, and John McFethries, of Springfield, and Charles E. Van Norman and Fred. D. Van Norman of Waltham. Charles E. Van Norman, manager of the former company, retains the same position in the new corporation.

—T. Sedgwick Steele of Hartford, Conn., well known to the jewelry trade as a member of the old house of T. Steele & Son, has achieved a genuine and artistic success as a painter of still life subjects. Probably his best work is "Net Results," which graphically tells the story of a day's sport with the rod, fly and landing net. The painting has been reproduced in black and white, and it loses nothing of its life-like similitude, except, of course, in color. It makes a very large picture and for the decoration of the dining room, or in fact of any room in a house, will prove to be most acceptable. Author's proofs are on the market and can be seen at the art stores. Mention of this picture is made in an advertisement on another page.

—At a recent visit to the American Horological Institute, 1723 Chestnut street, Philadelphia, Pa., we were very much impressed with the appearance and appliances of the school. Europe can no longer lay claim to monopoly in technical training schools, as regards horological or kindred arts. While it is true, that in theory, unaided by tools and facilities to realize such abstractions, Europe is our peer; when it comes to applied mechanics—we mean tools to do fine work and accomplish rapidly desired results—America now leads. We can heartily indorse, from our own inspection, the claims of the management of this school, to new and superior tools and appliances to aid in lathe work, springing and adjusting, and jeweling. We can assure pupils who anticipate attending this school that they are making no mistake.

—A. X. Roy, one of the oldest and best known practical watch case makers in the country, has severed his connection with the Roy Watch Case Co., and organized a new company under the name of Roy & Co., with a thoroughly equipped factory at Nos. 47-53 Clymer St., Brooklyn, and office at 23 Maiden Lane. Mr. Roy's experience covers a period of 35 years, during which he was for 16 years with the Brooklyn Watch Case Co., in charge of various departments. His name is a guarantee of a high standard of both quality and workmanship. Coming upon the scene at this time when sharp competition in the case business has let in many abuses, the new company will seek the support of the trade by adhering strictly to quality and offering only the most salable and original designs. The selling department is in full charge of R. P. Lyon, office at 23 Maiden Lane.

—The optical goods trade will notice that the Supreme Court have decided that the business of the T. A. Willson Optical Comr pany, limited, will after May 5, be known as the Gustave Walte-Optical Company, limited, the business office continuing at the same place, 14 Maiden Lane, New York. The business of this company during the past four years, has grown into large dimensions, under the energetic management of Gustave Walter, whose name in favorably known in optical circles from the Atlantic to the Pacific coast. He will be president of the new company, with Geo. M. Bacon, vice-president, and G. A. Walter, treasurer. The company will carry one of the largest stocks of spectacles and eye-glasses in the country, and will hereafter import large quantities of optical goods of all kinds, such as spectacles. eye-glasses, opera and field glasses, telescopes, etc. It will be noted also, in their advertisement in another column, that they have on hand a large stock of the T. A. Willson Co.'s goods, which, by agreement, they will dispose of at factory prices and on most liberal terms. It will be observed that the change is only in the name, and in the enlargement of the field of the company's operations in regard to foreign operations and more active and energetic management.

—The Mt. Washington Glass Co., New Bedford, Mass., enjoy a reputation in this and in many foreign countries for their meritorious productions in art glass-wares, both decorated and cut. So great has been the increase of their business during the past year that they have been obliged to double their capacity. Among their new patterns the Royal Flemish Ware is worthy of especial mention, being pronounced by dealers and connoisseurs one of the handsomest patterns in the market. The celebrated Burmese Ware which originated in their factory, has won for them the plaudits of royalty, specimens of it now adorning the palatial rooms of Windsor Castle, the home of Queen Victoria. Among the distinguished purchasers on this side of the water is ex-President Cleveland. For table use they have an endless variety of useful and ornamental articles in rich, cut glass. The goods of their manufacture are now acknowledged to equal or surpass foreign wares, and they will undertake to match or duplicate foreign pieces, both as regards quality and price. As they are one of the pioneer houses in America in their particular line, their experience is of great value to customers. They publish a most complete catalogue of their cut-glass manufactures, which they will be pleased to send to intending purchasers in the jewelry trade.

—Ben. J. Cooke, of B. J. Cooke's Sons, Philadelphia, celebrated his wooden wedding on the 1st of April.

—The Meriden Britannia Co., have just opened their new sales rooms at 26 Avenue de l'Opera, Paris, France.

—Wm. Smith & Co., the manufacturers of gold and silver chains, have moved from 33 Maiden Lane to Nos. 5 and 7 Maiden Lane.

—The copartnership of E. Whitney & Co, North Attleboro, Mass., was on April 1, dissolved by mutual consent. William A. Read of the late firm, and Henry A. Lincoln, continue the business under the firm name of Read & Lincoln.

—A bill has been introduced in the New York State Legislature requiring a heavy license fee from hawkers and peddlars of every kind and description The bill is so sweeping in its provisions that it will cover jewelry peddlers, traveling opticians and the like.

—F. Dreher, 16 Maiden Lane, New York, has just issued a new repairing price list. It is very complete, the prices are very low, and the pamphlet is distributed only to the trade. Mr. Dreher's change from his store at 1668 2nd Avenue has proved successful.

—Coral is being worn more at present than at any time for fifteen years past, and is evidently becoming fashionable again, especially in necklaces and in jewelry where fine pink balls can be used. Lawson & Van Winkle, of No. 11 Maiden Lane, can supply the needs of the trade in this line as well as in black onyx and hematite.

—Taintor & McAlpine, Easthampton, Mass., say that jewelers are taking more kindly to watch clubs as time goes on. They have a new book for keeping the accounts of a watch club, which is much more convenient than the old card, and their Little Gem drawing machine has been improved in construction and appearance.

—Joseph H. Fink, for many years well known to the retail jewelry trade, has established a business of his own at No. 27 Ann street, New York, where he will manufacture a full line of ladies' fancy and gents' seal rings. The factory is already pushed to its utmost to supply the demand, and the energy of the proprietor bodes well for the future prosperity of the firm.

—Charles S. Platt, of 4 Liberty Place, N. Y., refiner and assayer of gold and silver, moves his works during the present month to 29 and 31 Gold street, the new building which he has erected particularly for manufacturing jewelers. There are still two or three offices and factories to let in this fine building, containing all the conveniences, power and light in abundance. We may mention as a rather unprecedented fact that Mr. Platt and his predecessors all of the same name, has remained in business on the one spot at 4 Liberty Place for the long period of 57 years.

—L. Tannenbaum, of L. Tannenbaum & Co., importers of precious stones, 65 Nassau street, New York, has recently returned from Europe with a most complete stock of diamonds and fancy stones of all kinds, both rough and cut. This house carries a very extensive stock, and those in search of anything rare and odd in this line will be sure to find it there, and at a satisfactory price. Mineral collectors and gem fanciers will also discover in their stock much that is worthy of their attention. Rough sapphires and other rough stones for mechanical purposes are one of their specialties.

—The demand for beauty combined with originality of design in silverware and jewelry, has never been so positive as at present; and it can reasonably be predicted that this demand will increase rather than diminish. Manufacturers who have no special designer, those whose force is incomplete or incompetent, in fact all makers of sterling silver and silver plated wares, jewelers desirous of introducing sterling silver, small wares and artistic novelties, as well as parties about to commence business, especially those intending to exhibit at the World's Fair, should refer to the advertisement of L. E. L., on page 92 of the April CIRCULAR, as they will undoubtedly be interested in the proposition therein made.

—"Aluminium," is the title of a book just published by Henry Carey Baird & Co., 810 Walnut street, Philadelphia. Perhaps no subject has ever engaged the attention of metallurgists so completely as this new metal, which has been dubbed "the metal of the future," but which through their efforts has really become the metal of the present. This book, to our knowledge the first publication of its kind on the subject, gives the history of the metal, its occurrence, properties, metallurgy, and applications, and is from the pen of Joseph W. Richards, M. A., A. C., instructor of metallurgy at the Lehigh University. It is profusely illustrated.

—L Combremont, 2 John Street, has resigned the agency of the Du Bois Watch Case Co., but will continue the importation of watch tools and materials as heretofore at the same place.

—Richard M. Collard, superintendent of the Leroy W. Fairchild Company's factory, died at his residence on April 7. For almost a year he had been unable to attend to his duties, but his employers held his position open and refrained from appointing his successor until his death. Deceased was a practical jeweler and an inventor of some note.

—C. Dorflinger's Sons, 36 Murray Street, New York, exhibit the finest line in the country of seasonable novelties in rich cut glass, comprising salad bowls, berry sets, decanters, jugs, table glass, flower vases, rose globes, etc. Their goods are all celebrated for the purity of the metal and the beauty of the cut and polish. Cut glass is now very popular for wedding presents, so the Messrs Dorflinger report.

—The W. C. Edge Co., 46 Green Street, Newark, N. J., are noted for their ingenuity in the invention of novelties in chains and bracelets. In this issue they illustrate the newest product of their factory, "Le Quatrefoil," a succession of balls in groups of four, making a very showy necklace, bracelet or queen chain. There is no connecting chain running through to break, and it is equally pretty in polished or Roman finish. A patent has been applied for on this material and will no doubt be issued, as it is radically new.

—When through the manufacture of a single specialty, the reputation of a house is made and retained for a number of years, no other evidence is necessary to prove that the line of goods is both salable and sterling in quality. Such a specialty is the "Princess" ring, known to every jeweler throughout the length and breadth of the United States and Canada. While the manufacturers have for years made a beautiful line of signs and emblems of the finest quality, the "Princess" has claimed their principal attention, and their enterprise has been rewarded with the success it deserved. At the present time no trade mark is more widely known than "Princess," now a synonym for all that is desirable in quality, finish and design in rings.

—Geoffroy & Co., manufacturing jewelers, have moved from 23 Maiden Lane, New York, to No. 935 Broadway, corner 22nd street, where they have fitted up an office and factory comprising 12,500 square feet of flooring. This firm has enjoyed a reputation second to none in fine enamel flower work for the past six years, and with increased facilities they promise the trade still further triumphs in this line from henceforth. But they will not confine themselves to it. They will soon have a new line of novelties to show which will eclipse all they have thus far attempted. Mr. Nicholas Geoffroy who now has charge of the business, is recognized as an experienced jeweler, whose fine taste and thorough practical training will be unmistakably apparent in the future products of Geoffroy & Co.

—A novel display of "orchid" jewelry was on exhibition during the past month at Tiffany & Co.'s, comprising more than sixty varieties and representing not only nearly all the known families available for this purpose, but also a number of varieties of the same family. The rarest orchids are represented in scarf pins, brooches, vinaigrettes, card cases, bonbonnières, portmonnaie covers, &c., and vary in price from $25 to $1,500. The flowers are accurately reproduced in form and color in metal, enamel and jewels. Some of the finest of this jewelry was displayed at the Paris Exposition, and the Frenchmen at once paid it the compliment of using the patterns and imitating them in cheaper goods. The tints and colors rival the exquisite shades of the natural flowers, and one looking at them might easily imagine himself in Central America or Brazil or in the hothouse of some New York millionaire.

—J. H. French, of jewelry auctioneering fame, has just completed a most successful auction sale of the stock of the American Jewelry Co., 171 Vine street, Cincinnati. G. R. W. Tirrell, an assistant of Mr. French, during the past month conducted the auction sale of the stock of J. Goodlive, Jr., the well-known jeweler of St. Joseph, Mo. The reader, if for any reason he may be contemplating a sale of his stock, will do well to refer to Mr. French's card to the trade, printed in another portion of this issue. The three remarkably successful sales—D. W. Granbery, Ackerman, Bicker & Manvel, New York, and the American Jewelry Co.,—which Mr. French has effected in rapid succession during the past two months, would have been sufficient to make the reputation of an ordinary auctioneer; but Mr. French in his career of 17 years has completed over 100 such sales.

—M. Abraham, jobber and retailer, has moved from 503 Fulton Street, Brooklyn, N. Y. to 515 same street.

—A. Wittnauer, successor to J. Eugene Robert & Co., 30 Maiden Lane, offers a large assortment of complicated watches at very moderate prices.

—J. L. Granbery, 5 & 7 Maiden Lane, New York, is having quite a run on the patent flexible imitation onyx bracelet, which they advertise on another page of this issue. Retailers who have not seen these goods should ask their jobbers for samples.

—E. R. Stockwell, 19 John Street, is in receipt of many inquiries from all parts of the country for designs and estimates of class rings and pins, and athletic prizes now in season. Jewelers called upon for such special work should send to him for designs and estimates.

—It pays now-a-days to advertise in a novel and striking manner, by the use of appropriate cuts. If you need any assistance in this line, The Pictorial League, Room 74, Tribune Building, New York, make a specialty of supplying cuts for advertisers, and you would do well to communicate with them.

— The Fidelity Watch Case Co. have purchased and refitted the factory at 28–32 Cumberland street, Brooklyn, N. Y., and will move thither from their present quarters at 380–82 Water street about May 1st. They will increase their facilities to turn out 600 gold cases per week. The new building is 50x100 feet and is four stories high.

—The New Jersey Lamp & Bronze Works, of New Brunswick, N. J., manufacture a line of goods specially for the jewelry trade, including fancy bronzes of all kinds, equalling the foreign, and artistic lamps in a large variety of novel patterns. Their New York showroom is at 91 Duane Street, where the jewelry trade will receive a cordial welcome.

—The ring gauges and sizes made by O. W. Bullock & Co, Springfield, Mass., are rapidly becoming the accepted standard. They are warranted true, and in fact all goods manufactured by this firm are guaranteed to be of the finest quality and most reliable construction. In tweezers alone O. W. Bullock & Co. make 150 different kinds, all hardened and provided with perfect points.

—G. Louis Fox, of M. Fox & Co, importers and cutters of colored and fancy stones, 1 Maiden Lane, New York, left for Europe on May 1, by the *Augusta Victoria*, on his annual tour to purchase full lines of goods for the fall trade. The office of this firm has lately received several improvements, and is now a light attractive office. Visitors to the city as well as the local trade are cordially invited to call at their office and examine the large lines of salable goods constantly carried.

—Until less than two months ago for a period of five years moonstone applied to jewelry had been unpopular and commanded little sale. About two weeks before the Easter holidays, the Gorham Mfg. Co. produced a large assortment of silver jewelry set with this stone. Since then the jewelry has become so popular, as being particularly adapted to Summer wear, that the company have found it advisable to increase the variety of jewelry to which the stone is applied, and are now displaying at their store large lines of moonstone brooches, lace pins, bonnet pins, scarf pins and rings. The stones, imported from Ceylon, are cut into four shapes, heart, round, oblong and oval, and in various sizes. The silver settings are invariably pretty and entirely new, scroll and chased work predominating. Some of the stones are cut and set to represent drops of dew, and the illusion is almost perfect while the effect is very attractive. Three heart-shaped stones applied to brooches and pins to represent a three-leaf clover is a design exceedingly popular. Double hearts and single hearts are also commanding a large sale. At present the settings are in plain silver, but the company contemplate getting out lines in oxidized work.

—On May 1, Charles Jacques, the well-known importer of clocks, 2 Maiden Lane, New York, opened his enlarged showrooms and displayed extensive assortments of all varieties of goods in his line, all of which were new and of attractive and salable character. By the removal of Le Boutillier & Co. to 17 Murray Street, Mr. Jacques now occupies the entire store with the exception of an office in the front, besides the whole basement, in which large quantities of goods are stored and displayed. Down the centre of the store are a series of tables with plateaux, upon which goods are attractively arranged. The two handsome lines of show cases along the wall, filled with goods, combine with the tables to produce a handsome effect. The elegant catalogue which Mr. Jacques has been preparing for some months past is now being distributed; it can be had only on application.

—This is the season when jewelers receive most frequent calls for timers and other complicated watches. Cross & Beguelin, 21 Maiden Lane, carry a large stock of these goods in nickel, silver and gold, both plain and split seconds.

—LeBoutillier & Co., the well-known importers of Royal Worcester and other fine pottery, are comfortably installed in their new quarters at 17 Murray street, New York. They have now two extensive floors well stocked with goods, a large portion of which are new.

—F. P. Locklin & Bro., have moved their factory to 63, 65, 67, 69 & 71 Clymer street, Brooklyn, N. Y., and their salesrooms to 202 Broadway, near John street. Their facilities for manufacturing are immensely increased, and their salesrooms more favorably situated to the jewelry trade.

—Alfred Krower, of Albert Lorsch & Co., 37 Maiden Lane, New York, arrived from Europe on April 23, by *La Champagne*, looking extremely well after a busy European trip of seven weeks. He brought with him extensive lines of novelties for the coming season. Mr. Krower assured the CIRCULAR representative that after a careful examination of the state of the European diamond market, he considered it firmer than ever.

—No. 1, Vol. 1, of the Directory of Patent Solicitors was issued last month. The contents of this book will prove of great value to inventors and prospective inventors, for besides a comprehensive list of patent solicitors, attorneys, lawyers and agents, it contains lengthy lists of model and pattern makers, novelty manufacturing concerns, designers and draughtsmen, wood and photo engravers, manufacturing trade journals, technical and scientific book sellers, and all classes of persons interested in inventions. The book is published quarterly by E. De V. Vermont, 744 Broadway, New York.

—One of the brightest spots in the New York trade—and their are now many, for the offices of jewelry dealers in New York have seen wonderful improvements within the past four years—is the new office of Odenheimer & Zimmern, occupying the first floor of 46 Maiden Lane. Everything in the way of fixtures, safes, counters, etc., is new; the walls and ceiling are covered with artistic paper, which harmonizes effectively with the oak woodwork. The office is much more spacious than the old one at 69 Nassau street, and all facilities for showing goods, shipping, etc., are considerably increased. The firm will continue to manufacture their well-known and salable line of fancy rings, diamond, white stone and enameled jewelry, and the celebrated O. and Z. initial rings and lockets.

—George A Paillard, of the late M. J. Paillard, and junior partner of the firm of M. J. Paillard & Co. manufacturers of musical boxes, died at Les Avants, Switzerland, on April 25, from emphysema. Mr. Paillard had been out of health since August 1887, when he saved the life of Vincente Serrano, who was engaged with him in surf-bathing at Elberon, N. J. He went to Les Avants in the fall of 1887, and returned to this country April 25, 1889, somewhat improved in health, but was soon ordered to Switzerland again by his physician. Mr. Paillard was born in New York thirty-seven years ago, and received a classical education at schools in Hamburg and Switzerland. He was a young man of fine presence and an amateur athlete of considerable reputation. He was a member of the New York Athletic Club, the Citizens' Bicycle Club, the New York and Brooklyn Jockey Club.

—H. A. Lambert, of Aikin, Lambert & Co., 23 Maiden Lane, New York, returned toward the close of last month from a six weeks' trip through the South. Though business claimed the major portion of his time and attention, the gentle society of his wife and a lady relative lent charm to his spare hours in the visiting of points of note, and the studying of traits and habits of our Southern countrymen. Mr. Lambert's trip from a business point of view was satisfactory, and he says that the condition and prospects of the "New South" fully warrant the glowing expressions that Chauncey M. Depew recently gave vent to in a speech on the subject. Speaking of Florida, he says that a newly-coined colloquial term is being bandied from mouth to mouth in that flowery state, namely "phosphate-crazy." It refers to a state of mind with which numerous people have become affected, owing to the discovery of several mines of phosphate rock, containing from 60 to 70 per cent. of phosphate, which is used in the manufacture of fertilizers. Several companies are forming, and one has formed with a capital stock of $1,200,000 for the mining of this mineral. The sales of farms containing the phosphate has enriched several farmers, and the effect of the influx into the state of this additional money has been to make the general condition of trade exceedingly good.

—Leon Hirsch, importer of Swiss watches, has moved from 41 Maiden Lane, New York, to 51 Maiden Lane, where he will have increased facilities for the transaction of his growing business.

—Hipp Didisheim, 83 Nassau street, New York, sole importer and manufacturer of that excellent watch, the "Nassau," arrived from Europe last month, bringing with him large assortments of new goods.

—Krementz & Co., have just completed arrangements at their factory to turn out 14-kt. gold beads of all sizes *in unlimited quantities*. The process which is entirely new is of their own invention, and produces a perfectly true round ball, much stronger than those made by the old methods.

—S. MacMutrie, formerly with H. M. Betz, Philadelphia, Pa., on April 16, was married to Miss Marguerite Evans. He has just accepted a position with Wheat & Hancher, Wheeling, W. V., a new firm, composed of C. H. Hancher, formerly with J. G. Dillon & Co., Wheeling, and A. A. Wheat, also a Wheeling man.

—Alexander Favre, the celebrated adjuster of watches and Government inspector of horological schools for Switzerland, is now visiting in the United States. Mr. Favre has for many years secured first prizes at the Geneva Observatory for the watches adjusted by him. All these watches contain Paillard's non-magnetic balance and hairspring.

—M. B. Bryant & Co., the well-known ring makers, have removed their factory from Liberty Street to the new Platt building, 29–31 Gold Street, where they have equipped one of the best and largest factories in their line on one floor, well lighted and comprising about 2,700 square feet of flooring. They will now be in better position to meet the growing demand for their large line of salable and novel rings, both fancy stone and seal.

—The representatives of J. B. Laurencot's, importer of optical goods, 33 Maiden Lane, New York, have determined to reduce their surplus stock of French clocks, bronzes and novelties. With this in view, they have made a very large reduction in prices, and for a short time bargains can be had at their establishment. Their stock of optical goods is also very large, and will in the future as in the past be kept up to a very high standard.

—It will be seen by referring to our advertising columns that M. Weis, late of Marx & Weis, New York, has formed a copartnership with Z. H. and O. H. Oppenheimer, formerly of Henry Oppenheimer's Sons, of Chicago, under the name of Weis & Oppenheimer, and have opened offices at 192 Broadway, corner of John street, New York. The Chicago *Journal* regrets to lose the Messrs. Oppenheimer from the jewelry circles of its city, but joins their many friends in wishing them abundant and continued success in their new field.

—Attention is called to the advertisement of David Marx, who has located his new business in the Jewelers' Exchange Building, 51 and 53 Maiden Lane. It is not often that we are called upon to inspect so comfortable and handsome an office. Mr. Marx takes with him into his new business, not only the good wishes of his many friends in the trade, but that which is more substantial and which will certainly secure his future success, the entire force with but one exception, of his former employees; while visiting Mr. Marx at his new quarters, we were pleased to meet these gentlemen: Geo. W. Mindil, Wm. E. Cohen, Jerome Sulzbacker, L. Reichman and Isidor Rosenberg.

—Henry E. Oppenheimer & Co., importers of diamonds and makers of fine diamond mountings, 47 Maiden Lane, New York, are among the most ingenious advertisers in the trade. They are issuing a pretty conceit in the shape of a bracelet measure made of celluloid. As it is a thing of use, every dealer should send his card for one. Messrs. Oppenheimer & Co. are about to place upon the market the single stone ring, the designer of which won the prize of $50 in the contest of several months ago. The pattern is very attractive, and will undoubtedly be received with marked favor.

—The Spencer Optical Mfg. Co. are enjoying a heavy business, and the demand for their goods increases as the months pass. This activity of business is due, aside from the sterling principles that govern all the transactions of this house, to the wide range and general excellence of their productions, and to the fact that they are always offering the trade something in the way of a novelty. The new patent "Spencer" opera glass holder, technically described in a recent issue of THE CIRCULAR, is now on the market. It is made in gold, silver or pearl in a great variety of patterns, from the plainest to the most elaborate. The demand for these goods has already been widespread, and everything points to an increase.

—The April issue of the New York *Jeweler*, published by S. F. Myers & Co, 48 Maiden Lane, New York, has appeared and contains among numerous other features of interest to the trade, the announcement of a full line of discontinued movements, the prices of which are exceedingly low. The *Jeweler* will be sent to any dealer upon application.

—A. J. Logan, Waltham, Mass., has just gotten out a new heavy screwdriver, which will be placed upon the market soon. The rapidly increasing demand for the line-guages manufactured by him is shown by an order recently received from the well-known house of S. Z Ferranti, London, Eng. Mr. Logan will send his Gem screwdriver to any part of the world at $1.25 per set, registry prepaid.

—Charles Leo Abry, 41 Maiden Lane, New York, has just placed on the market an exceedingly handsome line of goods, consisting of a large assortment of "Star and Crescent" movements, of which he is sole importer, set in steel cases with and without raised bronze ornamentation. The cases are oxidized, the main ground being almost of the color of ebony The watches without the effective bronze ornamentation are peculiarly adapted for mourning wear. The dials of all these watches are variously designed and beautiful.

—D. F. Foley, well known to the trade through his long connection with the gold pen business at 23 Maiden Lane, New York, has leased spacious offices, consisting of rooms 1 and 2, at 180 Broadway, which he has handsomely fitted up and where he will accord his friends a hearty welcome. Mr. Foley is enjoying an unusually active business for this season of the year, and with increased stock and facilities, it is reasonable to predict that this satisfactory condition will continue. Mr. Foley carries most complete lines of gold pens, pencils and novelties, and is wholesale for the celebrated Paul E. Wirt fountain pens.

—The Waterbury Clock Company, 10 Cortlandt street, New York, recently placed on the market a nickel clock christened "The Wasp," which they claim is the smallest lantern pinion movement made The dial is two inches in diameter and the clock is provided with a polished spring encased in a barrel in such manner as to give an excellent maintaining power, and the movement has a fine escapement with 240 beats per minute. The movement is easy of access, being removable from the case, without the use of tools by a slight turn of the back to the left. Another attractive novelty which the company have just got out is the "Hornet" gilt clock. Jewelers should send for a sample.

—The Holmes Burglar Alarm Company wish to say to the trade that they have been in existence over twenty-five, and for over sixteen years of that time have been engaged in operating the electric protective central office system. During this long period they have invented, patented and applied the most reliable system against burglary and fire the world has yet seen. Their business has become a necessity, its value being acknowledged by the best business men in this and most of the principal cities of the country. No pains or expense has been spared in adding new inventions and keeping the service fully up to the demands of all patrons. Scarcely a year has passed when they have not been compelled to defend their patents from infringers, their last suit being against the American District Telegraph Co., terminating in their favor, as they claim all suits yet entered into by them have terminated. Immediately after the settlement of this suit, some six or seven years ago, three young men, formerly in the employ of the American District Telegraph Co., organized a new company under the name of the Metropolitan Burglar Alarm Co., with W. R. Alling as president, and commenced business. When they covered the first safe, the Holmes Co. sued and obtained an injunction against them, granted by Judge Wheeler of the United States Court. After the patents under which the suit had been brought had expired, the Metropolitan Co. was reorganized and commenced business using these expired patents, but not daring to use the many unexpired patents of the Holmes Co., which render their services superior to any other in the market. Among these improvements, exclusively the property of the Holmes Co. and used by no other, is the device for protecting wires or lines between the office and the place protected, which enables the home office to know at any moment that the current is actually passing through the safe and not through a short circuit which leaves the safe entirely unprotected. This device, rival companies cannot use nor can they use the delicate devices for giving signals to the main office, without which device the whole system is greatly weakened. They claim that they are prepared to show that not a subscriber has left them upon his unbiased judgment.

WHAT THE TRADE SAY OF THEM.

We like the Anti-Swear above all others.

Respectfully,

J. W. HULL & Co.

Grafton, W. Va.,
Nov. 20, 1889.

Everybody using the Anti Swear Button says it is the best yet.

Very truly yours,

GEORGE W. FROST.

Sioux Falls, D. T.,
Oct. 25, 1889.

Rochester, Pa., March 8th, 1890.

Mess. J. T. SCOTT & Co.
4 Maiden Lane, N. Y.

Gentlemen :—When in your store in Sept., 1888, you gave me a pair of *Anti-Swear* Sleeve Buttons for my own use which I have worn ever since and I really think they work better now than when new.

After explaining the working of the different buttons to a customer I invariably sell a pair of Anti-Swear. I am very much pleased with your latest designs.

Very truly,

J. LINNENBRINK.

I can endorse the Anti-Swear as the best I have ever seen.

Yours, &c.,

A. C. COLLINS.

Cleveland, O.,
June 5, 1889.

The Anti-Swear will take first place when once known to the trade.

Very truly,

F. C. MILLER.

Belvidere, N. J.,
March 22, 1889.

Washington, Ind.,
Jan. 4, 1890.

Mess. J. T. SCOTT & Co.,

Dear Sirs :

I have tried your Anti-Swear Cuff Buttons during the holiday trade just closed, and find them good sellers, in fact I could sell no other kind when they were shown.

They are simple, strong and durable, and will, I am satisfied, prove to be the button of the future. I have a pretty full stock of other kinds at present but will work them off, and keep nothing but the Anti-Swear.

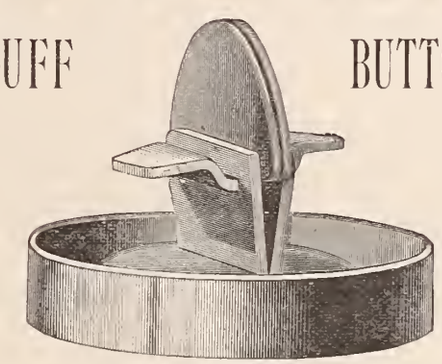
Yours, &c.,

N. H. JEPSON.

THE

ANTI-SWEAR

CUFF BUTTON.



OPEN.

Knoxville, Iowa,
Nov. 22, 1889.

Mess. J. T. SCOTT & Co.,

Dear Sirs :

I bought a stock of your Anti-Swear Buttons in the spring and put them in with my other goods. The Anti-Swear are all gone and the others still remain. *They sell at sight and at good profit. I highly endorse them and the way you have taken to keep them in the legitimate trade.* Send me an assortment by first express, also eight or ten show cards and cuts like enclosed.

Respectfully yours,

D. A. CURTIS.

ENDORSED BY THE

OHIO RETAIL JEWELERS' ASSOCIATION.

THE ONLY LINE OF CUFF BUTTONS IN THE MARKET

SOLD EXCLUSIVELY TO THE RETAIL JEWELRY TRADE.

We are now making a large line of these Buttons in Rolled Plate, Gold Front and Solid Gold. ☞ *Orders for Selection Packages Solicited.*

J. T. SCOTT & CO.,

SOLE MANUFACTURERS,

4 Maiden Lane, New York.

"GEMS AND PRECIOUS STONES OF NORTH AMERICA."

During the past month there has been issued from the press of the Scientific Publishing Co, 27 Park Place, under the above title, the most remarkable work on American precious stones that has yet appeared. The author, George Frederick Kunz, is recognized as the best authority the country affords on matters of this kind, and we can be sure that whatever emanates from his pen is strictly accurate and fully up to the times. But the book which we have before us far exceeds all expectations in the wealth of the information it conveys and the beauty of the illustrations it contains.

Mr. Kunz possesses peculiar facilities for the preparation of a work of this kind. He is expert for the house of Tiffany & Co., and his labors in connection with the division of mineral statistics of the Geological Survey have enabled him to obtain much information as to localities of occurrence, and to keep in touch with the industry at large. Thus equipped on both the mineralogical and commercial sides, he has succeeded in bringing together a vast amount of interesting descriptive and historical information never before presented with any similar degree of thoroughness. His admirable monograph occupies a field long vacant, and though it professes to deal only with the precious stones of North America, it also covers the whole range of the subject from a general point of view and gives no little insight into the condition of the gem interests of the whole world. The references to foreign occurrences are naturally desirable for comparison and guidance in treating of the American precious stones.

After a general introduction the author takes up the several species and varieties of the gem minerals in the first eleven chapters, in which the stones are described by groups and individually, with a short mineralogical explanation, usual mode of occurrence, history of discoveries and detailed accounts of the different productive localities and of specially important finds. Chapter XII. is devoted to pearls, Chapters XIII. and XIV. present a view of the Canadian, Mexican, and Central American localities, and Chapter XV. describes the remarkable aboriginal lapidarian work of North America, a much discussed and most interesting theme. The closing chapter includes definitions, imports and production, values, cutting of diamonds and other stones, watch jewels, collections of gems and minerals, uses of precious and ornamental stones for the ornamentation of silver and furniture, and for interior decoration, etc.

Apart from its interest to the student, archæologist, mineralogist and geologist, the work has a decided practical value for the miner, prospector and all persons who are likely to meet with valuable stones or to be deceived by imitations and misnamed specimens. In the search for mines or specimens the hints given in this book would be of high importance. It is also a trustworthy guide for the jeweler and dealer. As a book of reference, "Gems and Precious Stones" will long be the acknowledged standard, and it will, therefore, be an acceptable addition to public and private libraries, and more especially to those of educational institutions.

No more artistically attractive book has ever been issued in this country. The handsome binding and paper and the perfection of typographical details make it at once an object of admiration to all who have a taste for *editions de luxe*, and are especially appropriate in the make-up of a work dealing with a subject which in itself has such close relationship to art and refinement.

The superb colored plates illustrating especially fine and typical specimens are by far the best examples of their kind which we have seen. They are reproduced by Messrs. Prang & Co., of Boston, from drawings made from the stones, and show the results of most painstaking care in securing the utmost truth of representation together with the finest artistic effects. The numerous other engravings offer a ready means for identifying specimens and illustrate striking examples, views, etc.

Among the Watch and Clock Companies.

—Phelps & Bartholomew, Ansonia, Conn., will shortly move into a new factory in the same town.

—Bids will be opened next week for the erection of the new wing to the Hampden factory at Canton, Ohio.

—The directors of the Elgin Watch Co. will meet in May and decide upon the matter of building a number of brick flats and a new factory wing.

—It is said that H. C. Behenna and Charles Berlin, late of the Waltham Watch factory, intend shortly to start in New York a school of mechanical drawing.

—Spokane Falls is negotiating with eastern capitalists for a watch factory.

—Col. W. A. Moore, of the Dueber-Hampden Co., spent the greater part of the month of March at the New York office of the company.

—S. T. J. Byam, ex-superintendent of the Trenton Watch factory, sailed for England, April 2, to enter upon his duties at the new Lancashire watch factory, Prescot.

—The marriage of Frank S. Baker, New York agent for the United States Watch Co., of this city, and Miss Minnie Weaver, of Utica, N. Y., occurred at the latter's residence last month.

—The banks of Aurora have begun suit in the Circuit Court against the Aurora Watch Company, asking the court to order the sale of the watch movements held by them as collateral security for the liquidation of their claims.

—The annual meeting of the American Watch Company stockholders took place recently, and resulted in the re-election of President E. C. Fitch, Treasurer R. E. Robbins, and the old board of directors. The annual reports of the officers of the corporation were pleasing to those present.

—There are now between 2,900 and 3,000 names on the local pay roll of the Elgin National Watch Co. The company are determined to turn out 2,500 movements per day as soon as possible and have instructed all the foremen to find room for as many new hands as they can work to advantage.

—Negotiations are pending for the sale of New Haven Clock Co.'s entire electrical plant for the manufacture of goods for electrical purposes, to a new syndicate of New York capitalists, who propose to purchase the plant and form a joint stock corporation to carry on the business. This department has grown to be an important one, and a profitable one also, but the object of the New Haven Co. seems to be to transfer it in order to confine themselves strictly to clock making. In four or five years the company have employed on an average fifty hands in this department—the present number is seventy-five—and has been making electrical supplies, telegraph keys and sounders, call boxes, etc., mostly for the Western Union Telegraph Co.

—The Boston Clock Co., have just issued a neatly bound catalogue, containing descriptions and illustrations of some of their excellent productions. The features of superiority in these clocks have often been expatiated upon, but it is not out of place to enumerate some of them in this item. The movement is isochronal, jeweled, runs eight days and has a fine compensating balance, equal to those of the best watches; the pinions are cut with precision and highly polished, and all the plates and parts are perfectly finished; the clock will run in any position, and can be handled without stopping the movement. The striking parts are arranged so that the springs can be replaced without taking the movement apart; they are independent of the time parts so that either may be repaired without disturbing the other; the dials are variously and elegantly designed in Porcelain with Arabic or Roman numerals. The movements are enclosed in gold plated, brass, onyx and marble cases. A price list of the illustrated designs, as well as those carried in stock, but not illustrated, accompanies the catalogue.

—In reference to the recent troubles of the Keystone Watch Club Co., and the Lancaster Watch Co., we are in receipt of the following letter from W. J. Atkinson, of Atkinson Bros., Philadelphia:

Philadelphia, April 15th, 1890.

Editor JEWELER'S CIRCULAR.

DEAR SIR.—The confession of judgments by Messrs. George M. Franklin and W. Z. Sener, in the name of the Keystone Standard Watch Co, was made on the last day of their terms of office, without the knowledge or approval of the Board of Directors, and it is claimed, by collusion with the creditors thus preferred and in fraud on the other creditors.

Neither Franklin nor Sener has one dollar of interest in the stock of the Keystone Standard Watch Co, having sold out entirely only a short time ago to Philadelphia parties represented by L. M. Simpson, who were prepared to make a heavy investment to increase the plant, but owing to Sener's refusal to resign they have till yesterday been unable to get control.

Immediate steps will be taken to have these judgments set aside and place all creditors and stockholders on an equal footing. In my opinion, neither the Keystone Watch Club Co., nor the Keystone Standard Watch Co. are insolvent; and it is extremely unfortunate that a petty faction of the stockholders of the former, and two men who are not even stockholders of the latter, should have forced them into apparent insolvency. I feel sure that they will not remain there long.

Yours respectfully,

W. J. ATKINSON.

—The Keystone Watch Co., Lancaster, Pa., made an assignment on April 22d, to D. Ramsey Patterson, of Philadelphia, judgment aggregating over $60,000 having been confessed to Lancaster banks by Capt. Franklin and W. Z. Sener, retiring officers of the company. An application has been made to the attorney-general of the state by a minority of the stockholders to annul the charter of the company. Meantime the factory is at a standstill while the contest goes on in the courts.

—The New York office of the E. N. Welch M'f'g Co., and Boston Clock Co., at 13 Maiden Lane, is now, with the exception of the installation of a complete system of incandescent lighting, entirely arranged, and is one of the most attractive stores on the street. The history of the spot on which this store is located proves the erraticalness of superstition. Though its number, 13, is considered the most unlucky in the infinitum, three most successful commercial houses saw their rise at this address; namely, Hartley & Graham, Giles, Wales & Co., and Spencer Optical M'f'g Co.; and it is safe to predict that the present occupants will add to their prominence and success. Most centrally located, handsome interiorly and exteriorly, replete with extensive lines of those excellent wares, E. N. Welch clocks and novelties, and Boston clocks, the store at 13 Maiden Lane, should be one of the busiest spots in the trade.

—The Dueber-Hampden Co., are now placing on the market a fine line of new movements, viz.: "Special Railway," which they claim is the finest full plate watch ever made in this country; "John C. Dueber," 15 jewels, nickel, adjusted to heat and cold; "Dueber," 15 jewels, nickel; "Dueber Watch Co.," nickel, 11 jewels in settings; ditto, gilt, 11 jewels in settings, and their 6 size No. 206, 11 jewels in settings. This line cannot fail to be very popular with the trade, and is already in great demand. To make room for these new lines they have discontinued the manufacture of many goods which were formerly very popular with the Hampden Co., at Springfield, but as the trade demanded a Dueber watch, the recent new movements have been made to supply this demand. Said Col. Moore recently: "Dueber watches are something like Faber pencils; the people know they are bound to be good and as represented."

—The Silver case factory of the Waltham Watch Company, has been sold to the Crescent Watch Case Company. No radical change will be made in the Waltham shop immediately, for the Crescent Company has yet to make preparations for this accession. The Crescent Company, as stated in the last issue of the CIRCULAR are to erect at Newark, N. J., a large building which it is not expected will be ready before fall. The business at Waltham will be closed out by the time for the annual vacation of the employes, and the rooms vacated will be put to other use. The change has been in contemplation for some time. The watch company needed more room and the question was whether to sell the present case making plant or erect a new building for a case factory. The changes which will be effected when this space is added to the watch plant will give the company a manufacturing capacity of 2,500 movements per day.

—On another page the reader may see illustrations of some of the new 16 size, open face, pendant setting watches with thin model movements, which the American Waltham Watch Co. have recently placed upon the market. The remarkable feature in these watches is the thin modelling applied to such a large movement as a 16 size. This achievement in watch manufacture may verily be placed among the most prominent in its history. The advantages of a thin modelled watch are apparent. In even a small watch they are positive; how much more so are they in a watch of 16 size. Retaining its time-keeping qualities, and its convenience for repairing, together with the same facial surface, it occupies less room, is fully one-third as bulky and is more attractive in appearance. When the stem-winding watch was invented, many as were its advantages over the old key-winder, it was found to have one noticable defect; owing to its more complicated works, it was nearly one and one-half times as thick as the old style. This objection for a considerable period was a drawback to its general adoption. The stem winder has however long since superseded it. Its rather cumbersome form especially in the larger size makes, has been endured because no better form has appeared. Yet for years the watch companies have felt the popular demand for a thinner time-piece. This has been impressed more deeply upon them by the fact that many men have been and are carrying ladies' watches because of their small bulk in the pocket. It has long been the ambition of experimenters and inventors to fill this need—to perfect a stem winding watch that shall be as thin as a key winder. It has at last appeared, and though only made in the finer grades at present the general application of this thin-modelling is only a matter of time.

Compliments of the Month.

River Falls, Wis., March 25, 1890.

Cannot get along without it. C. F. WINTER.

Placerville, Cal., March 21, 1890.

I have gained a great deal of information since I have taken THE CIRCULAR, and I can say this much that it is a great book for young men to study up the business they follow. F. A. BARSS.

Sarnia, Ont., March 28, 1890.

I have been benefited by THE CIRCULAR during the past year that I have been a subscriber. E. T. BATES.

Corning, Iowa, March 29, 1890.

I can't discard an old friend; have taken it for the past 18 years
O. A. PEASE.

Dallas, Texas, April 10, 1890.

Could not keep house without THE CIRCULAR, having perused every number from Vol. No. 1. AUSTIN & SON.

Fairmount, Neb., April 8, 1890.

It is a splendid paper. ZINN & KRAMER.

Warsaw, Ind., April 5, 1890.

I have every book or rather CIRCULAR for 12 years.
J. W. CURTIS.

Littleton, N. H. April 23, 1890.

I could not think of being without THE CIRCULAR I have been a subscriber for fourteen years and if THE CIRCULAR lives and I live, I shall be a subscriber for fourteen years more.
E. FLINT.

La Porte, Ind. April, 9 1890.

Am trying to induce several of my students to subscribe to THE CIRCULAR to get the new article by Lange. Was much pleased with his article on chronometer escapement. J. L. HUTCHINSON.

We received a very pleasant call the 12th from Mr. Ingersoll of THE JEWELERS' CIRCULAR, 189 Broadway, New York. He was well pleased to see the Institute in such prosperous condition, and the management feel that THE CIRCULAR is responsible for some of it, being as it is one of the best trade-journals published, and we wish THE CIRCULAR "God speed." It has done its part towards educating the watch repairer for over twenty years, and it is still adding to its prestige. The present management is to be congratulated on their ever increasing success.—*The Watchmaker.*

Rockford, Ill., April 17, 1890.

I have not yet received the April number of THE CIRCULAR. I would like to get it as I wish to bind them. J. H. WILLIAMS.

Grand Forks, N. Dak. April 17, 1890.

Having been a subscriber for many years, I always look upon the new number as an old friend, sometimes changing in outside appearance, but getting better and improved with its age.
M. WITTELSHOFER.

Cincinnati, O., April 11, 1890.

Editor of the Jewelers' Circular:

Your paper does certainly receive a great circulation. We have received a letter from British Honduras and one from Allahabad, India, asking us to send selection of diamonds.
OSKAMP, NOLTING & CO.

Simpson's Store, Pa., April 23, 1890.

I do not wish to miss a copy.
A. M. HAYS.

OUR TRADE ORGANIZATIONS

THE JEWELERS' LEAGUE.

AT THE regular monthly meeting of the Executive Committee of the Jewelers' League, held on April 4th, there were present Messrs. Howe, Bowden, Greason, Jenks and Sexton.

Three requests for change of beneficiary were granted. Dr. W. H. Farrington of the Astor House was appointed additional examiner for the League in New York City, There were three applications for membership rejected, and three laid over for investigation. The following applicants were admitted to membership: H. M. Betz, Philadelphia, Pa., proposed by W. H. Tarlton; J. S. Brooker, Cheyenne, Wyo., proposed by H. E. Buechner; J. L. Dahlin, St. Paul, Minn., proposed by G. W. Hanenstein; J. C. Gigon, Philadelphia, Pa., proposed by W. Mayhew; S. Goodman, New Haven, Conn, proposed by M. L. Bowden; D. Harris, Albany, N. Y., proposed by Louis Miller; E. J. Hertz, Philadelphia, Pa., proposed by Simon Muhr; M. Herzberg, Philadelphia, Pa., proposed by I. Herzberg and Pfaelzer Bros.; Wm. Hirsch, Chicago, Ills., proposed by Adolph Hirsch; A. H. Jacot, New York City, proposed by Wm. Bardel; A. W. F. Kiefer, Philadelphia, Pa., proposed by F. C. Lingg and David Kaiser; C. F. Laughaar, New York City, proposed by Max Freund; J. E. Laurencot, New York City, proposed by John W. Senior; E. G. Lohmeyer, Newport, Ky., proposed by Jacob Dorst; Wm. H. Long, Philadelphia, Pa., proposed by J. F. Thomas; A. P. Morris, Newark, N, J., proposed by J. Herzog; F. W. Romer, New York City, proposed by Alfred Cooley; W. H. Schempf, Wheeling, W. Va., proposed by R. J. Donohoe; H Schimpff, Philadelphia, Pa., proposed by G. C. Booth; J. F. Van Borstel, New York City, proposed by R. Mason, Jr.; R. Warshawski, Altoona, Pa., proposed by W. W. Rudisill; J. Weinmann, Philadelphia, Pa., proposed by F. B. Herbert; F. I. Williams, New York City, proposed by J. G. C. Cottier; C. E. Wood, New York City, proposed by W. H. Jenks; J. A. Zobel, New York City, proposed by G. H. Hodenpyl.

The next meeting of the Executive Committee will be held on Friday, May 2d, 1890.

THE JEWELERS' SECURITY ALLIANCE.

THE regular monthly meeting of the Executive Committee was held at the Alliance Office on the 11th inst. There were present A. K. Sloan, Vice-Pres., J. B. Bowden, Chairman; Chas. G. Lewis, Treas., and Messrs. White, Stuart and Butts.

The following firms were admitted to membership: F. M Sproehnle & Co., St Paul, Minn.; John Johnson, Baton Rouge, La.; W. T. Jennings, Plattville, Wis.; A. O. & A. M. Frick, Waynesboro, Pa.; H. M. Betz, Chester, Pa.; Blair & Crawford, Philadelphia, Pa.; American Watch Case Co., Newark, N. J.

THE JEWELERS' AND TRADESMENS' COMPANY.

THE following have been granted certificates of membership during the past four weeks:

Charles R. Wells and John Gundie, New Haven, Conn.; John M. Link, with A Milne & Co., Newark N. J.; Julius Mulhauser, Brooklyn, N. Y.; Moritz Rosenthal, with A. B. Ansbacher & Co., Chicago, Ill.; and Daniel Bain, with Davidson & Pitcairn, Francis R. Fast, John C. Howe, Clement R. Jordan, with H. C. Bidwell, Jacob Klein, with Julius Wodiska, Moses P. Phillips, Abraham Weinstein, Alfred F. Motschman and Frederick B. Clement, with Brower Bros., New York City.

NEW YORK JEWELERS' BOARD OF TRADE.

DURING the past month painters, carpenters and other mechanics were busy beautifying the rooms of the Board, and now they present a very attractive appearance. The walls and wood trimmings have been handsomely painted and the ceilings frescoed in floral designs. The private office of secretary Condit shows considerable artistic taste.

A special meeting was held by the Directors of the Board on April 15, to take action on the Torrey bankruptcy bill. They declared, after discussion, in favor of the bill and endorsed every clause of it. The secretary was authorized to solicit subscriptions in the trade toward defraying Col. Torrey's expenses in drawing up the bill and securing its passage in Congress.

Hayden W. Wheeler & Co and the Seth Thomas Clock Co., have been admitted to membership.

THE JEWELERS' CO-OPERATIVE BUILDING AND LOAN ASSOCIATION.

THIS organization which had its birth early in the month of April, has grown with wonderful rapidity, until at the present writing nearly a thousand shares are taken and about 125 names are enrolled. The workings of these co-operative building and loan associations are now so familiar that it would be superfluous to go into the details here. The officers are: President, E. S. Johnson, Jr.; vice-president, L. W. Sweet, of the Cheshire Watch Co; secretary, Wm. A. Smith, with Bates & Bacon; treasurer, E. P. Ellsworth, of the Brooklyn Watch Case Co.; trustees, for three years, P. J. Babcock; for two years, S. F. Myers; for one year, David Marx, directors, E. V. Clergue, of the E. Howard Watch & Clock Co., C. W. Harmon, of Joseph Fahys & Co., E. R. Crippen, J. J. McCrain, Elias Woolf, John F. Stout, A. L. Brown, James Abbott, B. F. Snow, P. R. Ketcham and Julius Goldsmith.

A meeting was held at 48 Maiden Lane on Wednesday evening, April 23d, at which a committee appointed on the constitution and by-laws made its report. This report was accepted and passed. The work of adding names is going forward rapidly and the future outlook for the organization is very bright. Quarters will probably be taken at 48 Maiden Lane.

NOTES.

Henry Hayes, President of the Jewelers' League, accompanied by his daughter, left last month on a three months tour on the Pacific Slope.

The directors of the Manufacturing Jewelers Board of Trade, met on April 19, and elected C. H. Downs trustee and admitted T. G. Frothingham to membership, making the total 109.

The Chicago Jeweler's Association will move from their present quarters in the Pike Block to the Adams Express Co. building where three times as much room as they now occupy has been secured. The new quarters will be fitted up in superb style.

Local Committees of the Watchmakers' and Jewelers' Association of Ohio are perfecting arrangements for the annual meeting to take place at Toledo, O., in June. The Central Traffic Co. have granted reduced rates to members of the association in view of the meeting.



VOLUME XXI. NEW YORK, JUNE, 1890. No. 5.

THE JEWELERS' CIRCULAR
AND
HOROLOGICAL REVIEW.

OFFICIAL REPRESENTATIVE OF THE JEWELERS' LEAGUE, THE NEW YORK JEWELERS' BOARD OF TRADE, AND THE JEWELERS' SECURITY ALLIANCE.

It is also the Recognized Exponent of Trade Interests.

A MONTHLY JOURNAL DEVOTED TO THE INTERESTS OF WATCHMAKERS JEWELERS, SILVERSMITHS, ELECTRO-PLATE MANUFACTURERS, AND THOSE ENGAGED IN THE KINDRED BRANCHES OF ART INDUSTRY.

SUBSCRIPTION.—To all parts of the United States and Canada, **$2.00 per Annum,** Postage Paid. To all Foreign Countries, **$3.00 per Annum,** Prepaid.

☞ *All communications should be addressed to*

THE JEWELERS' CIRCULAR PUBLISHING CO.
189 BROADWAY, NEW YORK.
CHICAGO OFFICE, 125 STATE ST., Room 18.

☞ *Advertising rates made known on application.*

GOSSIP OF THE MONTH.

☞ A full Index to Advertisements and a Table of Contents will be found on Page 5 of this issue.

Subscribers will do a favor by notifying us at once upon the non-receipt of any number of THE CIRCULAR. The mails will occasionally miscarry, but we will cheerfully make good Uncle Sam's little shortcomings by sending another copy to replace any missing one.

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A MOVEMENT is on foot among the clothing, hat, and other trades to prevail upon Congress to amend the Inter State Commerce law so as to allow the railroads to give concessions to commercial travelers on ticket and baggage rates. This agitation was started some time ago by the Commercial Travelers' Union, but failed of its object mainly because, as presented to the congressional committee, it bore the stamp of a privilege, and such it undoubtedly would be if the benefits of the law were confined to commercial travelers alone. In their disapproval, therefore, the committee seem to have acted in consonance with the true spirit of the Inter State commerce law, as well as of the constitution of the United States, which forbids discriminations of this kind. The position of THE CIRCULAR was defined in some editorial comments shortly after the meeting of the Commercial Travelers' Protective Association held on December 1st, 1888, at Chicago, and we cannot do better than quote these in part.

"Railroads are common carriers. Discriminations of this kind are in violation of their charters which proceed from the State, and hence cannot give powers inimical to the general principles of our government. If religious evangelists are to be the recipients of special favors at the hands of the government or its agents, so may the 'commercial evangelists of the nation.' No more vicious principle of legislation could possibly creep into the laws of a free people. It is the parent of all sorts of tyrannies. Once abandon the high ground of strict and unconditional equality before the law, and the breach is opened for a horde of abuses to crowd in and destroy the last vestige of our freedom. That breach has already been opened. To the precedent invoked by the association we must emphatically take exception, and insist that the whole line of reasoning that supports it is false and unconsequential. The travelers take too narrow ground. There is a sound basis in reason for the graded rates or 1,000 mile tickets they are seeking to secure. Commercial travelers as compared with most of the traveling public are 'wholesale' travelers, and as such are entitled to cheaper fares, just as a man who buys a large quantity of goods expects to and does get them cheaper than a man who purchases at retail. This right to buy railroad fares at wholesale, however, cannot justly be monopolized by an individual or an association. All must be put on an equal footing. It is a question of expenditure, not of vocation, and any citizen, whatever his profession or the motive of his travels, should be accorded the privilege of purchasing these tickets. The government 'of the people' is not created for the purpose of distributing awards for good behavior. It is no part of its business to grant favors to certain orders or sects of superior sanctity or usefulness. There is, as we have seen a sound business principle underlying the proposed legislation, but any attempt to limit its benefits to the Commercial Travelers' Association is unjust and unconstitutional. If the movement can be carried out in a liberal spirit, that organization may do a distinguished public service redounding not only its own but also to the advantage of every citizen. But if it imitates the selfish, grasping policy of the lobbyist, it will but add its name to the army of greedy partisans that already besiege our legislative halls, clamoring for governmental boons and patronage.

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If you have a case in Optics that puzzles you, write it out for Dr. Bucklin's department of THE CIRCULAR, *send it in and you will get an answer.*

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THE attention of manufacturers seeking export trade is called to the letter from a "Jeweler on his Travels" which we publish in this issue, dated from the City of Mexico. It contains many suggestions that the wise should carefully heed. There is no doubt that in manufacturing goods for foreign markets we are far less enterprising than our competitors across the water. We have accustomed ourselves to look upon the export branches of trade as of little consequence anyway—a kind of dumping ground for surplus or damaged stock—and hardly credit the foreigner with sufficient intelligence to know what he wants and what he does not want. In consequence of this prevailing indifference goods have been carelessly boxed and shipped without consulting the peculiar cus-

toms of the countries for which they were intended; while in the matter of style or design very few manufacturers have thought it worth while to make a study of their foreign customers' tastes. This is one of the chief reasons why we appear at such a disadvantage in foreign markets as compared with the manufacturers of England, France and Germany, who having long ago applied themselves sedulously to the cultivation of foreign trade, now control many distant markets entirely, in which we by virtue of our closer position and our superior facilities of manufacture should have the first claim. But foreign trade does not descend, as the dew from heaven, upon the enterprising and the indifferent. It comes by hard work and special effort, and is well-worth the effort it costs. Indeed, it is quite safe to say that it is the most profitable of all traffic if rightly conducted, as numbers of instances in our own trade tend to prove. It is high time that we should bestir ourselves and advance our claims abroad. The country of Mexico, for example, which our correspondent is visiting, is so convenient to our borders, and its special wants can be so easily ascertained, that there is no excuse for failing to take advantage of the abundant opportunities it offers for profitable exchange. Before dismissing this subject it is only fair to say that our manufacturers have lately shown unmistakable signs of awakened interest in export trade, and if they persevere, will surely win the recognition they deserve.

The CIRCULAR is determined to do its part by disseminating useful information and continually urging its patrons to work up this branch of their business.

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Read the interesting biography of Jules Jurgensen.

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THE RECENT decision of Judge Ermston, of the Cincinnati Court, against the Russell Bros.' watch club of that city, declaring it a lottery and therefore illegal, is of sufficient interest to the trade to warrant our reprinting it in full on another page of this issue. This case, which was taken as an example by the prosecutors, the Ohio Retail Jewelers' Association, was an unusually flagrant one, and it is scarcely just to attach the odium of the decision to the watch club system in general. That there are many abuses connected with the instalment plan of disposing of goods cannot reasonably be denied, but on the other hand it has greatly stimulated the sale of watches, and, if legitimately conducted, is a positive advantage to many persons of limited means, even though the prices charged must necessarily seem excessive, owing to the risk involved and the long term of credit. The decision, however, may have a salutary effect in rooting out the fakirs and irresponsible parties who have been improving the opportunity to impose upon a too credulous public.

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Monograms—*Monograms*—MONOGRAMS—FREE *to new subscribers* *See page* 47.

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THE TARIFF reformers seem to have run against another snag in their proposal to increase the duty on mainsprings from 25 to 60 per cent. For the manufacturers of cheap watches this would be a very serious matter. Of the fifteen watch companies in America it is said that twelve import their mainsprings. To pay the increased duty on their imported springs or buy them here, the companies making the cheaper grades of watches would have to raise the price to a point where it would be impossible to compete with the cheap Swiss and French timepieces. The expediency of destroying so important an established industry for the sake of building up a small branch of manufacture seemed more than doubtful, and a representative of that industry was dispatched to Washington to enter a protest. It is understood that the protest will be heeded and the duty left as it now is.

FROM the summary of imports and exports issued by the Treasury Department for the month of March, we glean the following figures of interest to the trade:

Exports of domestic merchandise for the month ending March 31—Clocks and parts, 1890, $109,499; 1889, $118,115. Watches and parts, 1890, $12,232; 1889, $12,436. Jewelry and manufactures of gold and silver, 1890, $38,295; 1889, $280,148. Plated ware, 1890, $34,816; 1889, $64,975. Exports of domestic merchandise for the nine months ending March 31—Clocks and parts, 1890, $990,102; 1889, $827,548. Watches and parts, 1890, $266,327; 1889, $158,-863. Jewelry and manuractures of gold and silver, 1890, $462,445; 1889, $572,129. Plated ware, $1890, $347,972; 1889, $436,532. Imports of foreign goods for the month ending March 31—Rough and uncut diamonds, including glaziers' diamonds, 1890, $9,828; 1889, $42,912. Clocks and parts, 1890, $27,427; 1889, $20,855. Watches and parts, 1890, $101,563; 1889, $130,622. Jewelry and manufactures of gold and silver, 1890, $113,506; 1889, $108,658. Precious stones and imitations, unset, 1990, $882,989; 1889, $1,095,-093. Imports of foreign merchandise for the nine months ending March 31—Rough and uncut diamonds, including glaziers' diamonds, 1890, $106,106; 1889, $207,828. Clocks and parts, 1890, $372,687; 1889, $351,530. Watches and parts, 1890, $1,216,397; 1889, $1,272,576. Jewelry and manufactures of gold and silver, 1890, $1,052,896; 1889, $1,019,724.

Hear the Other Side of the Case.

THE Metropolitan Burglar Alarm Co. wish to make the following statement to the trade, in answer to the claims set forth by the Holmes Co. in the last issue of the CIRCULAR:

The Patent litigation of the Holmes Company, as claimed in their advertisement in the JEWELER'S CIRCULAR of May, as being so heavy that scarce a year "has passed when they have not been compelled to defend their patents," does not correspond with the next statement that their last suit was against the American District Telegraph Company, as the records show that on January 25, 1883, the Holmes Burglar Alarm Tel. Co and the Am. Dist. Tel. Co. made an agreement, by which the "Holmes Electric Protective Company" was formed, and to which they each agreed to assign all their Patent rights touching burglar alarms

Instead of the suit against the District Co. terminating in favor of the Holmes Co it was never tried. It was compromised and the agreement above referred to made.

The Holmes Co. did for a time have a temporary injunction against the Metropolitan Company for more than a year, during which time the Holmes Co. had a monopoly and charged its subscribers accordingly.

When this suit was brought to final hearing before Judge Coxe, he held, in December, 1887, that to find a new position for an old device was not patentable, and that the patent was void, and a decree was entered accordingly, dismissing the Bill of Complaint with costs.

The patent on which the suit was brought did not expire until November, 1888, nearly a year after the decision of Judge Coxe. Immediately after Judge Coxe's decision dissolving the injunction, the Metropolitan Burglar Alarm Company began active operations, and in May, 1888, six months before the expiration of the Roome Patent, was in successful operation.

So far as the claim of the Holmes Company to the exclusive right to use the device for protecting the wire between the office and place protected is concerned, their only ground for such claim is the Guernsey Patent, which expired October 11th, 1887. It is an old device shown and described in many English and American patents, prior to the date of the Guernsey Patent.

The devices used by the Metropolitan Company to insure proper working of the signals, are new and of the latest design and apportionment of parts affording a much better production than any old devices can.

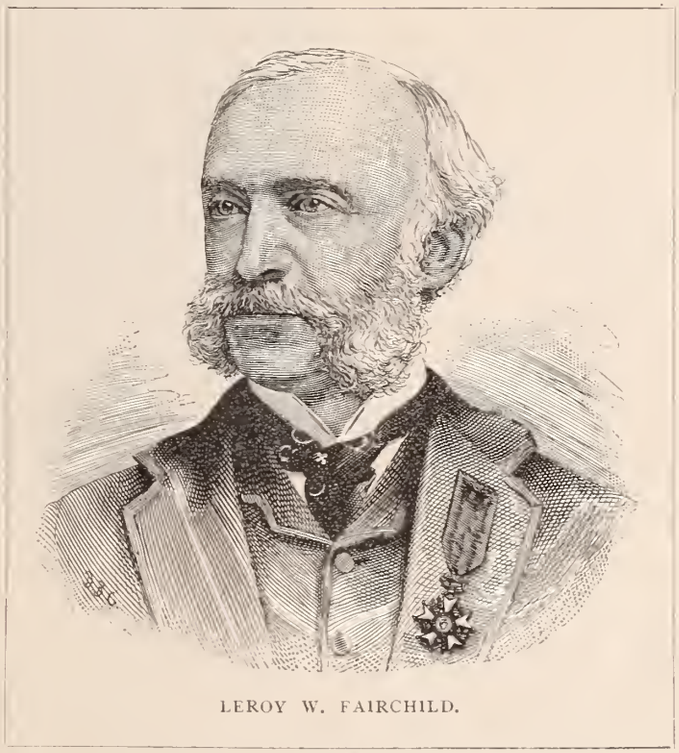
The subscribers who have left the Holmes Company doubtless were biased by the fact that they could get a better service for ten dollars than the Holmes Co. gave them for fifteen; in that sense it is true that they did not leave upon an unbiased judgment.

Leroy W. Fairchild.

CHARACTERISTICS OF A SUCCESSFUL BUSINESS MAN.

WHAT DO we look for in reading the life of a successful business man? Is it to learn the private incidents of his career? Is it to make ourselves acquainted with the progress of the arts in his particular line of manufacture or trade, or the various steps by which he attained fortune? Or is it rather to get an idea of the character of the man who has won so prominent a position among his fellow men? The first purpose is for the curious, the second for the speculative, and are thus both of no specific value. But the third, the nature of the man as an example for emulation, is the real end we seek. Incidents in a man's life may reveal certain traits in his character, but the character is the creator of the incidents. So in a biography of Leroy W. Fairchild, who has just retired from an active business career of over forty years, a record of incidents would be of no value were we to overlook the character of the man who really made these incidents. He is an eminent proof that "man is his own star" and the molder of his own destiny.

Independence has ever been one of his dominating qualities. Believing all men of honesty and right mindedness to be of as good clay as himself, he has never allowed another to do for him what he could do for himself, no matter how menial the work. Though requested time and again to associate himself with lodges, societies and the like he has strenuously refused, for he could brook no master of his actions. When solicited by many friends to become a member of a well known Regiment, his answer was "No; I will never allow anyone to dictate to me when to sit down or when to get up." Endowed with that almost overpowering nervous force that has been a characteristic of some of the world's greatest men, combined with an ambition to achieve some good by which the country might be benefitted, an unceasing passion for work has always possessed him; the brain in a constant whirl to conceive some new idea, the hand ready to execute it. Work day, work night, often until the muscles relaxed and the nerves gave away, but rising again to finish his self-imposed task. The strength of his will to gain an end is well illustrated by his self education. Entering upon life as an uneducated boy he determined to tutor himself, until to-day he may be considered a well read, scientific man, familiar with all the sciences and arts, far more so than many graduates of our colleges.



LEROY W. FAIRCHILD.

Unconsciously following the advice Daniel Webster gives to young men, it has been his desire to associate himself with persons of the highest moral, mental and social attainments. Succeeding in his efforts he has ever moved in the most exclusive social circles of America and Europe, and has become the personal friend of many royal, noble and aristocratic personages. Pennsylvania Avenue, Murray Hill, Belgravia, St. Germain, have all admitted Mr. Fairchild as an honored figure in their gatherings for years. A hater of all that is treacherous, deceitful and ignoble in mind, he has carefully avoided any association with persons of sensual or dishonest character, no matter how exalted their positions might be. His wrestling with the world having perfected him as a student of human nature, he has been enabled to read character from physiognomy and manner as if it were an open book. A man of competence for many years, he has never indulged in the pastimes of many such; he has never visited a race track, entered a barroom or practiced any of the small vices which are said to make life worth living. To be a cultured, refined, trustworthy gentleman has been his aim, and general opinion hath it so. Never having been a debtor to the amount of a dollar, he has always sustained a high mercantile credit.

Such a man has Mr. Fairchild been—an independent, persevering, refined, honest gentleman. He has been loved sincerely by all who have known him, especially by his numerous employees, many of whom were his apprentices thirty years ago. On his recent return from Europe they presented him, as a mark of their high regard, the following set of resolutions, handsomely engrossed:

GOLD PEN DEPARTMENT OF THE LEROY W. FAIRCHILD CO.

Whereas, it has come to our knowledge that our esteemed, worthy and generous employer, Leroy W. Fairchild, has been most signally honored by the

FRENCH GOVERNMENT,

And Whereas, That government has conferred upon him one of its proud distinctions of merit, the decoration of the Cross of the Legion of Honor, and

Whereas, We, his employees in the gold pen department of his business, have this day

Resolved, We tender him our most sincere and heartfelt congratulations, and trust that the future of his business may meet with the same glorious results which have graced its past history.

Resolved, That a copy of the resolution be suitably engrossed and presented to our worthy employer, as a token of our love, respect and appreciation.

MICHAEL E. SMITH, *Chairman*
MICHAEL F. RICE,
JOHN J. DENNIN,
HERMAN E. KRUGER,
ALBERT H. HOFFMAN,
} *Committee.*

He would often pass through the factory and shake hands with many of them as personal friends. He has been a confidante of their good fortunes and a helper in their needs. This generosity of heart has extended in all directions, a tale of sorrow or want always arousing his sympathy and aid.

Leroy W. Fairchild was born in New York on August 12, 1829. His ancestors for generations back were cultured people. He commenced life at an early age, first as a lad in the offices of newspapers, then as a clerk in book publishing houses, and afterwards for several years as a solicitor in all the leading cities in the South and West for orders, on special books and railroad matter. In the last class of work he formed numerous acquaintances among stationers, etc., which afterwards proved of value to him..

During all these early years he was diligently educating himself. In 1849 he entered the gold pen house of Spencer, Randall & Dixon, whose factory was in the old Parmly Building, corner Maiden Lane and Broadway, and whose office was at No. 2 Maiden Lane. The art of making gold pens was then in a very crude state. The firm failed in 1851, and the creditors to effect a compromise, proposed to Mr. Fairchild that if he would become a partner with Mr. Randall he would be given title to one-half of the plant and would not be held responsible for the debts of the old concern. The latter agreeing, the firm became Randall & Fairchild, and within a very few years every dollar owed was paid, and the business was on a solid foundation. During these years the subject of this sketch had become a thorough practical mechanic, and having discovered that the class of goods that the house had been manufacturing was not what was

wanted, he set about perfecting improvements that entirely revolutionized the gold pen industry. After the death of Mr. Randall the surviving partner continued the business under the name of Leroy W. Fairchild.

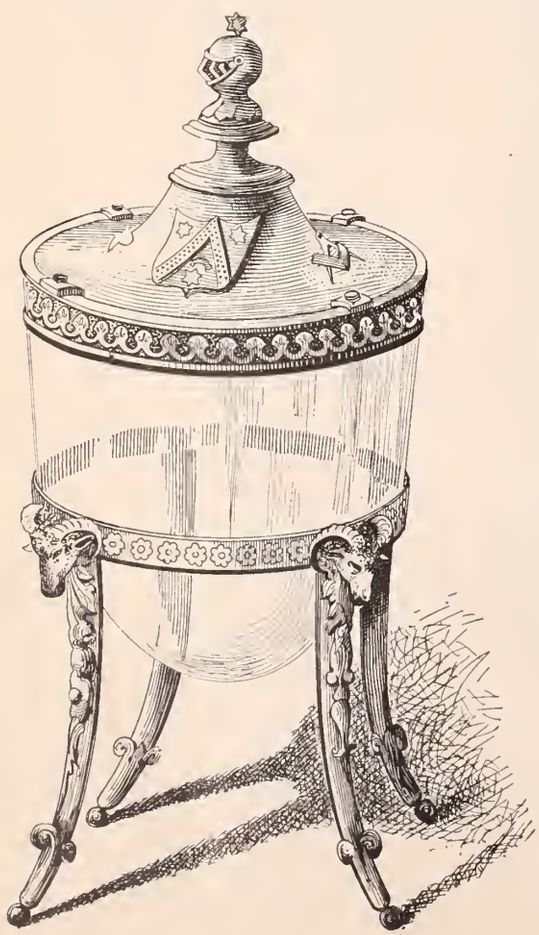
Since Mr. Fairchild assumed a controlling interest in the concern their principle has been to manufacture only the finest class of goods. That success has crowned their efforts is testified to by the enormous business they have done for years past. They attempt to reach the better class of tradesmen only, though over 3,000 accounts are open on their books. Millions of pens bearing the name of Fairchild are distributed over the entire world. A few years ago the firm commenced to manufacture in addition to gold pens and pencil cases, a line of gold and silver small wares, the success of which has been most pronounced.

Testimony of the superiority of the productions of this house may be gathered from the numerous first prizes received at various national and international expositions, an enumeration of which is as follows: New York American Institute, 1847, 1848, 1849, 1850, 1853, 1876; Paris Exhibition, 1867; Vienna, 1878; U. S. Centennial, 1876; Sydney, 1877; Adelaide, 1881; New Zealand, 1882; The World Industrial and Cotton Exposition (2), 1885, and the latest grand prize at the Universal Exposition, Paris, last year, and the personal decoration to Mr. Fairchild of the Knight of the Cross of the Legion of Honor of the Republic of France, by its President, M. Carnot.

Mr. Fairchild was advised more than a year ago to give up business on account of ill-health, but delayed his retirement until May 20. He feels confident that his sons, Leroy C. and Harry P., with the co-operation of S. S. Battin, Jr., who has become associated in the re-organization, are fully capable of sustaining the high character of the name of Fairchild.

A Crematory Urn.

THE graceful object illustrated herewith represents a crematory urn of the latest fashion. The bowl is made of the finest crystal glass, mounted in elaborately decorated silver. A crest surmounts the urn, which shows, in addition, masonic emblems and two shields for inscriptions. It is the production of a London, and is undoubtedly a pretty thing, but most people would prefer, probably, an urn which would shield "the ashes of their sires" from view.



Sometimes a woman has real golden hair, and sometimes it is only plaited.—*Terre Haute Express.*

Memorial to George W. Royce.

AN ELEGANT tribute to the memory of the late George W. Royce, of Peterson & Royce, who died on Jan. 11, last, was presented a few days ago to his three surviving sons. It is in the form of an album, and is covered with black morocco leather. The front cover is embellished with elaborate oxidized silver mountings in rococo style, consisting of delicate scroll work intertwined with forget-me-nots, shells etc. In one corner is a monogram of the deceased gentleman's name, and the names of his sons, Edgar, Irving and Roger, and the date of the death are engraved along the lower edge. This beautiful piece of handiwork is a production of the Gorham Mfg Co.



On the pages of the album, which are secured by a silk ribbon, is the following inscription, handsomely engrossed:

TO THE SONS OF GEORGE W. ROYCE, WHO DIED JANUARY 11, 1890.

Dear Boys: Although, personally, most of us are entire strangers to you, nevertheless, we feel ourselves constrained through our friendship for your father to express our heartfelt sympathy with you in this great sorrow which you are called upon to endure by the loss of this your beloved and faithful parent.

We all of us knew him well and knew him to be a sure and faithful friend to everyone whom he called by that name. Always genial, always cheerful, he had ever a warm welcome for all he met, and the strong grasp of his hand always carried with it the assurance of sincerity and manly recognition.

In business life your father was remarkable for promptitude, uprightness and honesty, while all his transactions were done in a spirit of the greatest kindliness.

The loss of such a wise counsellor must necessarily be deeply felt by you in after years, and so we pledge you our willingness to offer you always, should you desire it, such advice as may prove sound, sincere and suitable to the occasion.

Therefore, in order to bear our testimony to his character, to his noble manhood, and also to perpetuate in a more fitting manner his memory and his worth as a friend, we have caused this letter to be engrossed in the accompanying gift certifying by our autographs both to the affection held by your father in our hearts and to the truth of the words of the wise man when he said: "A good name is rather to be chosen than great riches."

The names of the donors, which are signed on the last pages, are as follows:

H. J. Teufel, John J. Heiser, S. W. Pickering, Geo. A. French, Anton Hodenpyl, Henry E. Ide, Wm. T. Gough, C. L. White, Ad. Luthy, A. R. Hutten, David Kaiser, Sidney T. White, F. A. Frey, Wm. M. Post, Harry A. Bliss, Wm. W. Hayden, Geo. Nelson Fenn, Fred. L. Martin, Louis E. Fay, C. A. Boynton Frank R. Horton, J. W. Watson, Frank H. Carpenter, W. P. Melcher, Cha Dorr, J. F. Crane, Robert N. Wilcox, Arthur Bradshaw, S. Kaiser, Harry Osborne,



A Jeweler on his Travels.

SIGHTS AND SCENES IN OLD MEXICO.—MEXICAN FONDNESS FOR JEWELRY.—HOW THEY CONDUCT THE GOVERNMENT PAWN SHOP.—THE AMERICAN TOURIST RAMPANT AND CURIO DEALERS HAPPY.—TYPICAL STORES AND WHAT THEY SELL.—FACTS AND FIGURES FOR AMERICAN EXPORTERS.

City of Mexico, May 15, 1890.

There is evidently good sale for jewels and jewelry of a high order in this city of sunshine, of smells, of dark-eyed senoritas, of cacti, of beans, of pepper, etc., for on the main street jewelry shops abound in such numbers that one is instinctively reminded of the Palais Royale by the glitter and flash of gems as one passes along.

There is one marked difference, however, the shops are not all infinitesimal in size, nor do all display their entire stock in the window. No indeed. There are several of these stores which savor more of the Rue de la Paix in point of size, and whose stocks would rival many a Broadway house.

But Mexico has one salesroom for jewelry—and other wares—such as America wots not of, nor would she if she could, I fancy. I refer to the Government Pawn Shop up on the Zocalo opposite the Palace—"El Monte de Piedad"—so they call it, and the name explains itself.

Here when a family is a little hard up, and must have something to go on with, *pro tem*, the jewels of la señora and las señorita are brought and placed in the care of the Government for a time; and el señor is loaned the wherewithal for the family needs. Then when the Opera Season is about to occur and the ladies of the family are expected to shine resplendent from the boxes of the National Theater, these jewels must be brought home, at once, so the head of the family has been known to jump into his elegant Victoria and be driven off in great style to El Monte de Piedad, and the government again kindly helps him out of his difficulties; he puts his carriage in pawn and takes out the family jewels. If he has more horses, etc., at home, perhaps the steeds, harness and everything else is put in safe keeping (temporarily).

An American tells the tale of applying at this government pawn shop to see if there were any carriages unredeemed and therefore for sale. "Come after the 18th of the month," said they, and come he did and went away again well fitted out with all the various vehicles with which he desired to set up an establishment.

On a certain Monday in each month all the unredeemed articles of all descriptions are put up at certain specified prices at public sale. If there are no offers, say, for a certain sapphire ring before the sale is over, one is asked to make an offer, and the story goes that travelers often go home with great bargains.

All travelers in Mexico expect to take home with them certain curiosities, *i. e.*, a few serapes (blankets), rebosas (long shawls), some Guadalajara pottery, perhaps a bright green paroquet in its cage and a handful of Mexican opals. The latter they fancy may be picked up for a song In days of old, before Americans thronged the world and spent their money with such lavish hand, there were bargains to be picked up in every clime and country, but *nous avons changé tout cela*, as the saying goes, and Mexico is no exception to the rule.

The sale of native productions and antiques to American tourists since the opening of the railways has advanced the price of everything of the kind an hundred fold, and good opals are not found by the handful.

Before the door of our hotel stands all day long a crippled peddler with a bowl of the rough native pottery, half filled with water, in the bottom of which a dozen or two opals are brightly shining, although dull enough they seem when taken out of the water and dried off. For these he asks from 50 cents to $5 each, and then one does not get much. Most of the jewelry shops have a similar bowl standing in the window, from which a little card sticks up having the words "50 cents each," but if one enters to examine a better quality of stone is instantly shown one and the cheaper lose all their attraction.

A pretty American selected five of these wonderfully colored stones for a band ring as a souvenir of the country; one was a deep amber in color, another milk white, the third bluish in tone, the fourth watery and translucent and the fifth a pale yellow, all possessing in a greater or less degree that heart of fire which is the opal's distinctive feature, the amber colored stone being almost like a glowing coal. As you can easily see, this semi-circle of strange-hued stones about the top of the finger would make a decidedly weird and unique ring, quite oriental in its character.

All the jewelers here unite in saying that scarce any opals are sold to Mexicans, who consider them not only unlucky, but no more to be valued than do Americans consider the pebbles on a sandy beach. The demand comes entirely from foreigners, Americans, of course, leading in this as in all things else. Mr. E. Sommer, whose house has been established here for thirty-eight years, and especially patronized by Americans, sold an immensely fine opal (of small size) to an American last year for $450. This is believed to be the highest price ever known to have been paid for a Mexican stone.

This establishment of E. Sommer is perhaps the oldest house in Mexico and the best known to tourists from the States. Thirty-eight years of known reliability has given confidence, and there is no spot more attractive than this brilliant showroom, nor any where the sight-seer is more cordially welcomed.

Hauser, Zing & Co., whose house, known as "La Esmeralda," makes a dazzling window display 180 feet in length, cornering on two principal streets, have been established in the city of Mexico for thirty years, and with a house in Paris and employing enormous capital, their facilities are equalled by but one other, if any, house in this republic.

These gentlemen tell us that they have been unable to sell American plated ware, as the French goods of Christofle have not thus far been replaced in the estimation of their customers. They say the same with reference to the Longines Swiss watches, preferring them and recommending them to their trade as superior to watches of American manufacture.

It must be remembered, however, that this is a French house, and their preference for the wares of their own country must be allowed for.

It may be said in general that there is absolutely no sale for solid silver, no matter where made, in Mexico, the duty, which is over $1 an ounce, placing it beyond mortal reach. One or two of the houses display some few pieces of Gorham ware side by side with silver fashioned in Germany, but it would be a losing game, they say, to carry any considerable stock until the present duty is modified.

American silver plated hollow and flat ware is being gradually introduced, but not to the extent that it might be. Mexico contains nine million people, this city alone 400,000, and the trade is worth cultivating. The only American silver plated ware noticed on sale is from the Meriden Britannia Co. and Reed & Barton.

American clocks are on sale in most of the leading jewelry stores, but preference is given to European makes, and an effort should be made to convert these dealers from their misguided notions.

It is needless to say that the idea popular with American tourists that diamonds can be had here at half the prices obtained in the States, is simply absurd. To be sure there is no duty levied on unset diamonds by this government, but Uncle Sam does not exact a high tariff from this luxury and the difference in price does not exceed fifteen per cent. Set diamonds pay about ten per cent. duty here.

Silverware pays about 100 per cent. duty, plain silver jewelry 70 cts. an ounce, silver jewelry set with stones, $1.05 an ounce, plain

gold jewelry, $1.20 an ounce, and gold jewelry set with stones $1.50 and ounce. Nickel watches pay a duty of 50 cts. each at exterior parts and about an aggregate of 10 per cent. extra exacted by different states through which they may pass. Silver watches pay $1.50 each plus this same 10 per cent., and gold watches $6.75 with 10 per cent. added. This includes case and movement, which, by the way, are not imported to this country separately.

Messrs. Diener & Roltaker, who have been established here twelve years, and who have had the agency of the Waltham watch for half that time, have by their enterprise created a demand for and an appreciation of this favorite American timepiece, which, already very great, increases daily.

These gentlemen ask THE CIRCULAR to urge upon The American Watch Co. the fact that Mexicans have a profound admiration for fancy cases; the more fanciful the better, and their taste in this respect is catered to by Swiss manufacturers while almost ignored by competing Americans. Right here—let us say—that this same thing is true in all classes of American manufactures.

We insist that the countries supplied by us shall take the style of goods we think most desirable, regardless of the opinion of the foreign purchaser. This is true of no other country and is a hindrance to our export trade.

Messrs. Diener & Roltaker sell a Waltham movement in a $\frac{900}{1000}$ fine silver hunting-case with gold joints, at $12.00, Mexican money, or say $9.25 our currency, in competition with the Longines watch, cased in silver $\frac{800}{1000}$ fine, of lighter weight and silver jointed, which sell at the same price.

Another old established house is that of Muiron y Cie., favorably known here for thirty-two years. Mr. Muiron is exceptionally well-informed and to him we are indebted for many opportunities of information. Like the other houses mentioned the glittering display of this establishment reminds us of the Parisian *Palais Royale*.

Last but not least, it remains for us to speak of an enterprising American manufacturer of Mansfield, Mass., who has for years maintained a branch house here, and who does a prosperous business. By name he is D. S. Spaulding. Although his factory in Massachusetts is devoted exclusively to rolled plate and tortoise shell jewelry, Mr. Spaulding's Mexican enterprise includes all those wares of this country in which Americans delight, feather work, pottery, wax and rag figures, curios, etc. His is perhaps the best known and most popular resort of tourists from the States.

C. U. LATER.

Stripping Gold From Gold Plated Ware.

ACCORDING to the following process the gold may be stripped from a gold plated article, no matter whether it was fire—or electrically gilt. When stripping with the battery do as follows: Suspend the article in place of the anvele in an almost exhausted bath, previously warmed. In place of the goods a piece of sheet copper, insulated in some manner, is best. After the current has been active for a short time the gold will be found to be entirely stripped from the article. The gold is recovered by diluting the stripping fluid with double the quantity of water and adding a solution of sulphate of iron. The gold will be precipitated in powder form, and may then be melted.

The gold may also be stripped by means of a mixture of 200 parts sulphuric acid, 40 parts hydrochloric acid and 20 parts nitric acid, in which it will gradually dissolve. The articles must always be entered in this mixture in a perfectly dry condition. To recover the gold dilute this acid mixture with from 10 to 12 times its quantity of water, and add a solution of sulphate of iron. The gold will also in this instance be precipitated in the form of powder, and may then be smelted in the well-known manner.

If the article is of a shape to be scraped, the gold may also be stripped in this mechanical way. The copper of the scrapings may be eaten out with nitric acid, after which the gold can be smelted.



Proceedings of the Watchmakers' and Jewelers' Union.

[NOTICE.—We shall be pleased to receive and discuss descriptions of new tools, attachments and improvements in any branch of our trade, and publish them free of charge; also inquiries for those desiring information on any point of general interest. Communications should be written as concisely as possible consistently with clearness, on only one side of the paper, and be received here by the 10th day of the month, in order to be discussed at our meeting for that month and inserted in the next issue of THE CIRCULAR. Address them to "Secretary of the W. & J. U., care of THE JEWELERS' CIRCULAR, 189 Broadway, New York." For full information for correspondents, see our Proceedings in THE CIRCULAR for October, 1889.]

Eighth Meeting.—Reported by the Secretary.

The May meeting of the Watchmakers' and Jewelers' Union was signalized by a remarably large attendance of members. The Secretary had the usual number of communications to present, the first of which asked of the learned body being

HOW TO REPOLISH PALLETS.

Columbu , O., May 10, 1890.

Secretary of the W. & J. U.:

It occurs quite frequently that American watches which are brought to me for repairs have the pallets marked or cut by the escape wheel, which I think remarkable, as the escape wheel is made of brass. I know of no watch jeweler in the vicinity, and cannot afford the time to send the pallets to a distant place to have them repolished. I would be pleased if you could give me some hint or instruction how I may repolish such pallets myself. I have a good set of tools, and can make any necessary appliance myself Yours truly, J. B.

MR. ISCHRONAL, who was given the floor, said in reply, that as the pallets in the cheaper grades of American watches are made of garnets, and the brass of which the escape wheels are made is of a very superior quality, these pallets will suffer abrasion and get marked. Moreover, the polishing of the impulse faces of the pallets is a nice operation that requires care, so as not to alter the impulse angles. The mere polishing is the easiest part, but to preserve the impulse angle as it is, requires skill and a special tool. The repolishing may be done by means of a boxwood lap, charged with very fine diamond powder and oil. This lap must be run at a high speed, say about 2,500 revolutions per minute, more or less, according to its size. A little oil has to be used during the polishing. In the absence of diamond powder, diamantine—such as is employed for polishing steel—may be used, but this will work much slower; at times, however, it will answer very well; much depends on the quality and hardness of the pallet stone.

MR. EXAMINER remarked that for the preservation of the impulse angle, a fixture may be placed in the hand-rest, made with a stem the same as a filing rest. In the watch factories a fixture is used which is placed in a half open tail stock, and which consists of a spindle with a small index plate attached horizontally to the end of it, that can be held in its proper place by a pawl and two notches corresponding to the position of the pallet angles on the plate. Such a fixture will enable an operator to make a perfect job. It has also the advantage that the angles of the pallets when not correct, may be altered to suit all requirements.

A general discussion followed, but all agreed that the speakers had covered the ground. The Secretary accordingly read the second communication, which requested information on the

METHOD OF REMOVING RUST FROM WATCHES.

New Bedford, Mass., May 3, 1890.

Secretary of the W. & J. U.:

I have received from a gentleman just returned from the Tropics a watch which

has been damaged by salt water, and all the steel parts are rusty. What can I do to restore the steel parts and remove the rust? For the present I have covered the whole movement with oil, for the purpose of checking the progress of the rusting. Yours truly, B. D.

The chairman called on Mr. Uhrmacher for an opinion. He said he thought that, as a rule, the steel parts of watches damaged very much by sea-water were beyond redemption. The course to be followed in a case of the kind the correspondent had in hand was, first, to wash the whole movement in hot or boiling water which would remove any remaining salt and sea water. Next dip the parts in strong alcohol to remove the water (though if the movement gets thoroughly hot in the boiling water, it will become dry immediately on being exposed to the air, and the dipping in the alcohol is a purely precautionary measure); then place the whole movement in kerosene for about twenty-four hours, after which time it will probably be possible to remove the screws and take the watch to pieces. When this is accomplished, all the steel parts should be boiled in a strong solution of cyanide of potash, which will remove all the rust, when it will be possible to make a survey of the real damage done. Any piece which will suffer disfigurement so as to damage its utility by removing the rust, he stated, ought to be condemned at once, because a partial removal of the rust spots from steel damaged by sea water is of no avail, as the rust will surely break out again. A protection against the breaking out of old rust spots recommended by some watchmakers is the rubbing of brass into the cavity of the damaged part. This remedy, he said, would be effective, but he would specially recommend the replacing of any damaged part by a new one, as that is a sure cure. If the damage was very extensive, in his opinion, a new watch was the best remedy.

The next letter was then taken up. The writer wished to know how

TO REMOVE A NAME FROM AN ENAMELED DIAL.

Palmetto, Ga, May 6, 1890.

Secretary of the W. & J. U.:

Can you inform me how I may remove a name from an enameled dial?

Yours truly, W. W.

Mr. O'Pinion thought the easiest way to remove a name from an enameled dial was by the use of diamantine and a piece of block tin, very much in the same manner as polishing a flat piece of steel. The diamantine should be mixed with a liberal quantity of olive oil, and should not be allowed to gather in lumps on the tin. This, with patience, he said, would remove any name or mark from an enameled dial without injuring the polish of the enamel.

Other communications were then taken up and discussed, among them the following one of unusual interest:

CEDARWOOD IN SHOW CASES.

Richmond, Va., May 7, 1890.

Secretary of the W. & J. U.:

I have had new show-cases put into my store about six months ago, and I find that the oil in my new watches kept in these new cases has become so thick and gummy, that some of these watches refuse to go at all, and others which do go, have very sluggish motions. Can you give me any reason for this?

Truly yours, F. S.

Mr. Expert being called upon to give his views on this subject, said he knew the trouble complained of was not a new one. The cause of it was not likely to be in the oil. Some years ago, he said a very fine astronomical clock failed utterly to give anything like the results which were expected from it, and the cause seemed to be poor oil. The clock kept no sort of time, and the same trouble occurred again. The oil used in lubricating the pivots was of the best, and the same brand had been used successfully on watch work. It was finally found that the back of the clock case had been made of cedarwood, which an old Scotch clockmaker pointed out as the cause of the trouble. The back of the clock case was removed, and one of black walnut substituted, and the clock did what was expected of it. It kept the very best of time, and the oil gave as good satisfaction as ever.

Mr. Examiner then instanced the anecdote told by the late Mr. Vulliamy, an eminent horologist, about George III. keeping his watches in the cedarwood drawers of a cabinet made especially at the Royal Observatory at Kew Gardens. These watches gave considerable trouble and dissatisfaction until the cause was found to be the exudation from the cedarwood box, which changed the oil into a gummy mass.

All agreed that in all probability the same cause was at the bottom of the trouble of which the correspondent complained, and that if he found this to be the case, the only effective remedy would be to remove every particle of cedarwood used in the manufacture of his show cases.

The Secretary then took up the next communication which proved to be

A PROBLEM IN PEDIGREE.

Franklin, Ind., March 20th, 1890.

Secretary of the W. & J. U.:

I have an old O. F. English Verge, fancy painted dial, winds from the front, case letters, C. H. M. No. 7,643 and No. 24,042, and a small stamp of a shape, which I suppose is intended for a lion. It is very light, and under the dial are the letters in a scroll, JAPY. Near this are two letters, C. M. It has a stop, which is the first I ever saw on a verge. Can you give me an idea as to the age of the watch? The owners think it is over 100 years, and would be pleased to have a more exact date. C. B.

Mr. Pivot thought the watch called an "open-faced English watch" did not according to the description given bear any marks of being a watch of English make. The letters, or rather the name "Japy" under the dial would indicate that it was a watch of French make in the character and style of an English watch. Mr. Horologer substantiated this view by informing the assembly that a French firm named "Japy" was still in existence, if he was not mistaken, engaged in the manufacture of horological merchandise in France at the present day. The fancy painted dial and the stop were additional characteristics pointing the same way. But what makes the supposition that it is a watch of French manufacture still more probable, he said, is the fact, that some eminent French watchmakers were engaged before the close of the last century and in the early years of the present century in manufacturing just such watches, strictly in conformity with the style of English verge watches, manufactured at that time in London and elsewhere in Great Britain. Some of these watches made in France were of a quality which could not be excelled at that time or since by any workman whatsoever. Taken altogether, he thought these circumstances pointed to the probability of the owner's supposition that the watch is about 100 years old being correct, particularly if the watch is really of French manufacture.

The next inquirer wished to know

WHAT IS A PARACHUTE?

Kansas City, May 2, 1890.

Secretary of the W. & J. U.:

Reading a description of a late invention in horology, I came across the term "*Parachute.*" Can you inform me of the exact meaning of the word?

Yours truly, J. B. E.

The encyclopedia of the Union, Mr. Erudite, volunteered the desired information, stating that a literal meaning of the word "*Parachute*" is "*fall protector.*" The same term is used in connection with balloons. When an aeronaut ascends in a balloon and an accident happens to him, by which the balloon collapses, he opens the parachute to make his descent slow and gradual. The word is derived from the French, the same as *parasol* or *para pluie*, sun or rain protectors. As applied to a watch it was first used by Breguet. The idea of a parachute is that if a watch is let fall or is subjected to violent external treatment, the balance-staff pivot holes may be saved from damage by the yielding of the pivot holes which have been set in settings with steel springs of such strength as to yield before injury may be done to the pivots. Such parachutes were extensively applied to watches having jeweled cylinders, when the horizontal escapement was applied to the finest of watches and

before the lever escapement had come into general use. The next subject of discussion was embodied in a communication asking

HOW TO TEST WATCH OILS.

Boston, Mass., May 2, 1890

Secretary of the W. & J. U.:

I see so many advertisements of "Watch Oils," each one being puffed and proclaimed to be the best; how can I discriminate?

Yours truly, W. U. F.

Mr. ELECTRODE who is something of a chemist, was requested to enlighten the inquirer. He said the question was not easily answered, but he would give a few hints which would be of use. All kinds of oil may be recognized by a test called the "Sulphuric Acid" test. By this test we can tell any kind of oil if not mixed, by dropping one drop of the acid into a small quantity of oil. Each kind of oil will display a different color under this test, as well as impurities. Impurities will show themselves in clottings of a blackish appearance. Linseed oil is purified by the sulphuric acid and time process. Oils, showing an affinity for oxygen, that is, becoming thick and gummy by being exposed to the dirt or by heating, should be avoided. Oils made of animals (quadrupeds), are of this class. Any good illuminating oil is a poor lubricator, because the amount of light given by burning a certain kind of oil will show its greater or less affinity for oxygen or oxidation. Fish oils do not give a good light in burning, but fish oils, as a rule are volatile and too fluid, and require to be mixed with some other oil to make a good lubricator for watches. A mixture of fish, olive and a small proportion of mineral oil makes a good compound for a watch oil. A test for acids is necessary as the purifying of oils is often done by acids, which makes them unfit for the use of watches, etc. The best test for a watch and clock oil, he thought, is its actual use under varying circumstances.

The subject of advertising novelties which was taken up for the first time at the last meeting, was then resumed. The secretary read a large number of communications from members of the trade in all sections of the country, endorsing the idea and expressing their desire to obtain electros of the sketches that appeared from time to time in the proceedings of the Union. A number of drawings were handed in for inspection by Mr. STILUS whose design at the last meeting was received with so much favor. One of them which it was thought might serve for an optician or a jeweler, is reproduced here. Mr. O'Pinion suggested for a caption "A New Cure for Astigmatism," "The Miser's Eyeglass," "Astigmatic and Don't know it," or something of that sort.



There being no further business, the meeting adjourned.

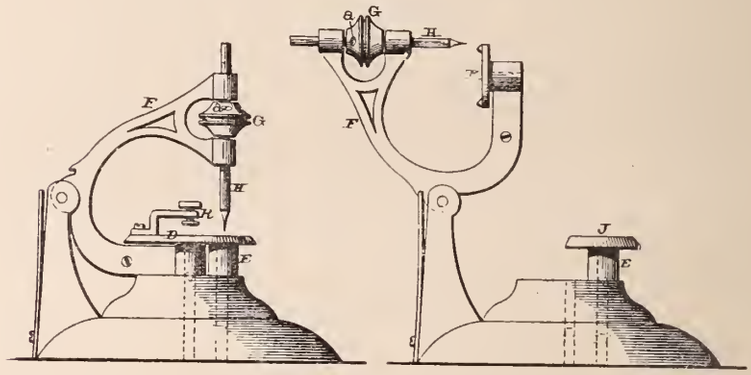


COMBINATION LATHE, STAKING AND JEWELING TOOLS.

AN APPARATUS that combines a lathe, and staking and jeweling tools, for staking, centering, drilling, pivoting, jeweling and other such purposes, will be readily appreciated by all watchmakers and jewelers. The following is a description of such a device, patented May 13, by Joseph G. Rawls, of Wilson, N. C.

It consists briefly in the combination of a base having suitable holes or sockets formed therein and a standard which rises from it, the frame of which is pivoted upon the standard and is adapted to be turned so as to bring the punch into either a horizontal or a vertical position, and disks or plates which are adapted to be used for different purposes specified above. Figure 1 is a side elevation of a machine embodying this invention, the frame being shown in one position and used in connection with the jeweling-plate Fig, 2 is a similar view showing the frame turned at right angles to what is shown in fig. 1. Figs. 3, 4 and 5 are side elevations of the plates

FIG. 1. FIG. 2.



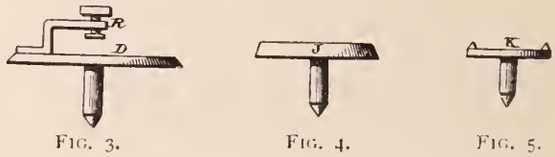


FIG. 3. FIG. 4. FIG. 5.

used in connection with this machine. The reader will by refering to the diagrams, readily understand the arrangement of the various parts.

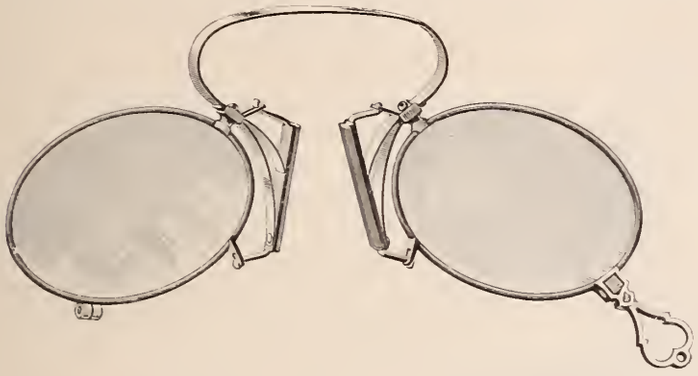
For jeweling, the operator brings the hole that is desired to be jeweled directly under the tool *H*, and when in position, secures the work firmly to the plate *D*, by the use of the clamp *R*, removes the set punch loosens the screw *a* in the pulley *G*, inserts another tool, as the case may require, brings it down to the desired depth, tightens the pulley *G*, and with the tool or cutter makes the hole any size desired, the pulley *G* acting as a gauge to the depth, and then runs the tool by hand or belt from counter-shaft.

In staking, the plate J (shown in fig. 4) is used after the jeweling-plate has been removed. With the set-punch bring any one of the concentric holes desired into position and secure by set or thumb screw.

For centering, drilling, and pivoting remove the plates *D* or *J* and the socket *E*, turn the frame *F* into the position shown in fig. 2, insert the centering-disk *K*, (fig. 5) center with set-punch, loosen the pulley, remove the punch, and now select the center to suit the staff. Place this in the frame *F*, through the pulley *G*, place the staff in position, putting the end to be drilled in the centering-disk, as shown in fig. 2. All of the plates or disks, and the tools in this device are made interchangeable.

PATENT ADJUSTABLE EYE-GLASS.

THE illustration below represents a patent adjustable eye-glass with nose-pieces free at each end. The top spring is rendered less rigid by two springs of unequal length, having ends resting upon the back of the nose-pieces. At the post and below on the eye wire of each eye are lugs through which the bent ends of the nose-piece pass, giving freedom of adjustment to the nose-piece. When the glasses are placed in position, the nose-piece is pressed back against the two springs, which yield gently, distributing the pressure along the entire length of the nose-piece; the glasses are thus capable of fitting any nose without discomfort or disfiguring



that member. The longer spring is either riveted to the nose-piece or loosely attached at its extremity.

The advantages of this nose-piece are obvious—ease in wearing and facility in adjusting various lenses of irregular refraction to the eye; the top spring being rigid and lower springs being light, the entire adjustment is obtained from the nose-pieces. This eye-glass is the invention of the National Optical Co., Philadelphia, Pa.

WATCH-BOW FASTENER.

The watch-bow fastener, patented April 29 by Oscar R. Decker, Rochester, Ind., and illustrated and described below, appears to possess several points of advantage worthy the consideration of manufacturers. It can be applied to a solid as well as to a hollow pendant, the wear is only on the ring or bush E, leaving the pendant free from damage, and the ring can readily be removed and replaced when desired.

In the accompanying drawings, Fig. 1 is a longitudinal section of a watch pendant provided with the improvement, and Fig. 2 is a longitudinal section of the bushing. The pendant is of the usual size and shape, and is provided near its outer end with the diametrical openings B. The ends of the ring are constructed with the

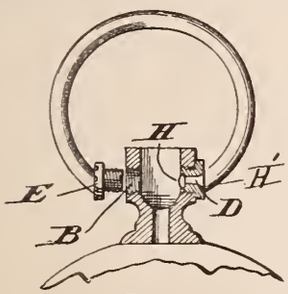


FIG. 1.

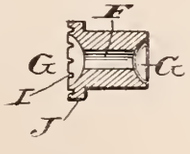


FIG. 2.

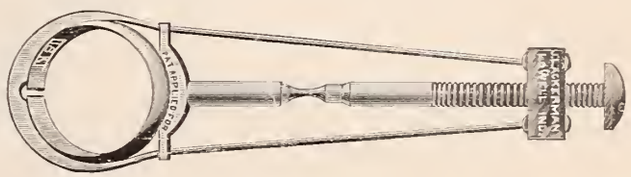
reduced portions or stems D, which are swiveled in the openings B.

In the preferred form of the invention the openings are provided with internal screw-threads, and the bushings E are provided with external screw-threads which engage with them. These bushings are provided their entire length with cylindrical holes F, the internal ends of which are enlarged, as shown at G G. The stems D of the ring are inserted through these holes and their extremities are then upset into the enlarged ends of the holes, thereby forming the heads H and swiveling the bushings on the stems or ends of the ring between the heads H and the shoulders H′ on the ring. The bushings are then secured in the openings in the pendant, so as to swivel the ring thereto, and in order that the bushing may be easily driven home on its outer end is formed the collar J, having a series of radial notches or recesses I, which are adapted to be engaged by a suitably-shaped wrench.

INGENIOUS RING CLAMP.

THE accompanying illustration represents a new and useful tool, called the Ackerman Ring Clamp, recently invented and patented by J. L. Ackerman of Lowell, Indiana. Any workman who has ever tried to solder a ring by using binding wire as a clamp, will readily appreciate this little tool on account of its simplicity as well as its practicability.

It is so constructed that any size ring may be held securely while being soldered, without the danger and annoyance of soldering a



piece of wire fast to the ring, which destroys the engraving and renders the job unsatisfactory to the customer. Another feature of advantage in this device is that it will aid the country jeweler in making ring sales, as by its use he is enabled to size a ring quickly; while without it he would have to send the ring to a manufacturing jeweler, entailing delay and expense, and often causing the loss of a sale. This article is being placed on the market by Benj. Allen & Co., Chicago.

Compliments of the Month.

Buffalo, Wyom., May 10, 1890.

Please send THE CIRCULAR to me as it is indispensable, or in other words, a very useful member of the family

J E. CHAPPELL

Culpeper, Va., May 15, 1890.

The number of complimentary copies of THE CIRCULAR which you have kindly sent me have been of incalculable benefit to me in my business, and I do not feel comfortable at not being a regular subscriber. I enclose the subscription price and do it cheerfully, feeling assured that I have already been profited many times the amount. H. C BURROWS.

Ft. Wayne, Ind., May 16, 1890.

Enjoy more reading THE CIRCULAR than any other paper that I receive. J. FERD. PIETZ.

Ft. Grant, Arizona, May 12, 1890.

I am glad you called my attention to the expiration of my subscription, as I don't wish to lose a number. J. E. LANONETTE.

Madison, Me., May 3, 1890.

I have every number of THE CIRCULAR from the first number of the 15th volume. T. F. MANTER.

Phila., Pa., May 5, 1890

In my judgment THE CIRCULAR is far superior to the other journals devoted to the interests of the jewelry trade.

HENRY P. VAN AKEN.

Denver, Colo., May 19, 1890.

By the way, I think yours is the best gotten up trade paper I ever set eyes upon.

Obituary.

GEORGE C. WHITE.

George C. White, of Rogers & Bro., who died on May 1, was, at the time of his death, no doubt, the oldest living person actively connected with the Maiden Lane trade. He was born at Hartford, Conn., in 1807, and was consequently 83 years of age at the time of his death. Early in life he was apprenticed to Wm. Rogers, a retail jeweler, at No. 4 State street, Hartford, where he learned the trade of watchmaker and general repairer, and, as was the custom in those days, the manufacture of solid silver spoons by the hand process. He made with his own hands the silver spoons that he presented his bride at their marriage, and stamped them with his own name. Soon after the expiration of his apprenticeship he came to New York to look for a situation in the year 1835. He first called upon Stephen Reed, of Maiden Lane, and modestly inquired if he wanted a clerk, but was answered in the negative. As he left the store, however, Mr. Reed hastily followed him to the door and called him back, and, after making some inquiries, engaged him at once. Almost immediately after his engagement and without his having any experience in the wholesale line, Mr. Reed filled a trunk with valuable watches, jewelry and gold chains, and started him on an Eastern trip to visit the large cities between New York and Boston. Mr. White called Mr. Reed's attention to the fact that he had made no inventory of the contents of the trunk, but Mr. Reed replied: "It is not necessary, for I think I can trust you." This trust imposed in the young clerk was never betrayed, and all throughout his life, under the keenest competition, Mr. White never uttered a word or did the slightest action that was not in strict conformity with the spirit of true integrity.

After remaining with Mr. Reed for a few years he was offered a very tempting position with the house of Young, Smith & Co., at that time the most influential jobbing house in Maiden Lane, occupying the building No. 4 Maiden Lane, and afterwards increasing their quarters by the addition of No. 2 Maiden Lane. Here for several years Mr. White rapidly rose until he acquired an interest in the business. Some changes taking place in that firm the early employees, including Mr. White, withdrew. Jacob R. Schuyler and Malcolm Graham, who had been fellow clerks with him, withdrew at the same time and founded the house of Schuyler, Hartley & Graham. Alfred H. Smith & Co. and W. S. Hedges & Co., the well-known diamond importers, were also offshoots from Young, Smith & Co. After the old house lost all its best and younger blood it soon went out of existence, for the younger men had the sympathy and confidence of the trade at large, and rapidly took the business away from their old employers.

In 1846 electro silver plating was first discovered in England and attracted considerable attention throughout the world. The old process of plating was by sweating an ingot of silver on to an ingot of copper, and then rolling out the united metals. The new process offered a field for the manufacturer of such goods far beyond anything possible by the old method. Wm. Rogers in 1847 procured a battery and plating tub, and began to experiment with the process in the basement of his store at Hartford, and was quite delighted at his success. The house of Young, Smith & Co. imported from England the German silver forks and spoons, and Mr. Rogers, with his brothers, Asa and Simeon, who had been fellow clerks with Mr. White at the old store at Hartford, embarked in the business of electro-plating them under the style and firm name of Rogers Brothers, the concern springing into a highly lucrative and successful trade. Internal disagreements and jealousies led Wm. Rogers to withdraw from his brothers, and the Rogers Brothers Mfg. Co. which succeeded the first firm, and he established the company known as Rogers, Smith & Co., and invited Mr. White to assume the managership of the selling department and find a market for the new goods. A large and prosperous business was the result, but unfortunately Wm. Rogers could not agree with anyone he ever had as a partner in business, and trouble soon began to show itself in the new company. It is but fair to say, however, that Mr. White's relations with Mr. Rogers were always of the most pleasant character, and, in fact, during his whole life he never had any business quarrels or differences with anyone. Meanwhile the two other brothers, Asa and Simeon, had withdrawn from the old Rogers Brothers Mfg. Co., and established the present corporation known as Rogers & Brother at Waterbury, Conn., and Mr. White soon after joined forces with them and assumed the sale of their goods in New York. The first year of the new enterprise was a very discouraging one. The two older companies had the market almost to themselves, and the friends of the new company in the struggle to obtain a foothold were almost discouraged. At the end of the first year of their existence the sales were so small that some parties who had invested their capital thought it best to wind up the concern, but by dint of producing the very best quality of goods and by hard work, the concern rapidly grew until it became the largest and most powerful company in the manufacture of forks and spoons in the country.

Mr. White had a very large acquaintance with the leading jewelers throughout the country, and this acquaintance in many cases ripened into a friendship that was terminated only by death. While a young clerk at Young, Smith & Co.'s his courteous and gentle manners and strict integrity won him the friendship and confidence of many of the best and leading jewelers throughout the United States, a confidence and friendship he never abused.

He stated that one day he observed a fair-haired young German looking at some goods in the window of the store in a rather critical manner. Mr. White stepped to the door and very politely invited the young man to walk in and look over their stock. He soon found that the young man was Herman Duhme, who was about to start in business in Cincinnati, and although the young man and Mr. White were perfect strangers to each other, Mr. White sold him his *first* and opening bill.

Very few men of his age were as active and in possession of such unabated faculties as the deceased. He was a man of the most correct and abstemious habits throughout his whole life, and possessed an iron constitution and a clear head. Very few, if indeed any, of his old friends were aware of his age, and he was generally rated from ten to fifteen years younger than he really was. He had a most excellent memory and seldom forgot a face. He was widely known by the jewelry trade throughout the United States, and was highly respected and esteemed as a man of irreproachable character; his word was as good as his bond, his integrity was like a rock. During his whole life he was singularly free from pains, aches or sickness of any kind, and only the day before his death he remarked how singular it was that at his extreme age he had been so favored.

Mr. White almost died in harness. For several days before he was induced to stay at home he was complaining of a very severe cold, and for probably a week he was attending to his business when he ought to have been at home on his bed. His illness was finally pneumonia, of which he died on May 1. He died as he had lived—a Christian gentleman, honored and respected by all who knew him.

JOSEPH WIENHOLD.

A well-known and highly-esteemed member of the trade in the person of Joseph Wienhold, on May 9th, departed from among us, deeply regretted by many. He had been ill but four days, and though his complaint was that dread disease, pleura-pneumonia, his death was sudden.

The deceased was born on November 11, 1829, at Münster, Westphalia, Germany. He received the sturdy common education of that country, and as a youth learned the trade of a general jeweler, serving the lengthy and exacting apprenticeship of the day and becoming a thorough mechanic, capable of performing any operation in the way of jewelry manufacturing. In 1849 he came to



Geo. C. White

SUPPLEMENT TO THE JEWELERS' CIRCULAR AND HOROLOGICAL REVIEW

America and within a few months obtained employment with a jeweler named Sohls, of Jersey City, N. J. During the following year, he entered as working jeweler the house of Grinnell, Salsbury & Co., of the same city, where he remained until 1858, when he went to Boston, Mass., and formed a partnership with Thomas M. Ward, now of 25 John street, New York, under the name of Wienhold & Ward, for the manufacture of a line of jewelry. This partnership lasted but one year. After the dissolution, Mr. Wienhold returned to New York and became a working jeweler with Menge & Pfeiffer, then at the corner of Cortlandt and Greenwich streets. At the breaking out of the war (1861), he again went to Boston, and became foreman in an ammunition factory. Here he remained until 1865, when we once more see him in New York, manufacturing, under his own name, gold, onyx and cameo jewelry, at 189 Broadway. During his stay in this building, William Walther, later partner and now successor of Mr. Wienhold, entered the shop as an apprentice. In 1870 his business having become quite large, Mr. Wienhold moved to larger quarters, 180 Broadway, where he remained until 1875, when he again moved to 24 John street, remaining at this address until his death. In 1883 Mr. Walther was made foreman of the factory, and in 1888 was taken into partnership.



JOSEPH WEINHOLD.

During this long career, economy, perseverance, industry and integrity were the ruling principles of Mr. Wienhold's actions. From small beginnings he built up a prosperous, conservative business, and ever retained the good will and respect of his fellow tradesmen. Liberal in every respect, particularly to his employees; modest in his tastes and desires, gentle and kindly, he was loved by all who knew him. His love of his home and family amounted almost to a passion.

The interment took place at Cooper's Cemetery, Staten Island, on May 13, a number of jewelers being present.

BRUNO H. STIEF.

During the past month the city of Nashville, Tenn., suffered the loss of one of its most influential citizens, and the jewelry trade one of its most prominent members, in the sudden death of Bruno H. Stief. On the evening of May 2, while conversing with one of his men, James B. Carr, over a glass of mineral water, he was suddenly seen to stagger. Mr. Carr rushed toward him and led him to a seat, where he gasped heavily once or twice. In a few moments Mr. Stief was lying cold in death due from heart disease. The deceased had exhibited no signs of ill-health during the day, but for the past five years was troubled by a slight affection of the heart, which, however, caused him little or no inconvenience.

Bruno H. Stief was born on March 21, 1845, in Bavaria, Germany. A few years before the Rebellion he came to America, a poor boy, and made his way to Nashville, where he entered as a clerk in a jewelry store. He soon succeeded to the proprietorship of this store, and became well known as a jeweler and repairer. After the war he began to prosper rapidly, until at the time of his death he had, without dispute, the position of leading jeweler in the State, if not in the South, both in point of financial strength and ability.

The business methods of the deceased were of the strictest order of integrity and fair dealing. His name was the synonym for absolute honesty and his reputation was spotless. He leaves behind him a comfortable fortune, honestly acquired and worthily enjoyed. His late home is second to none in the city for beauty, without ostentatious display, and in all his social relations the deceased had the reputation of a man of noble nature. A widow and two adopted children, a boy and a girl, survive him.

On May 3 a meeting of jewelers was held in the Maxwell House to take suitable action in regard to the death of their fellow craftsman. The following resolutions were offered by F. L. Davies and S. O. Merrill:

Resolved, That in the death of B. H. Stief, the jewelry trade has lost one of its most honorable, upright and conscientious members, the city a large-hearted and public-spirited citizen, and it is but a just tribute to the memory of the departed to say that he was in every way worthy of our respect and confidence.

Resolved, Further, that we extend to the bereaved widow our sincerest sympathy in her deep affliction, and that we attend the funeral in a body.

Resolved, That a copy of these resolutions be forwarded to the family of our departed friend, and also furnished to the city papers for publication.

The Board of Directors of the American National Bank also called a meeting, and ordered the following tribute spread on the minutes:

"B. H. Stief was a man of untiring energy and most affable and pleasant manners. He was in all respects a model merchant, as was evidenced by his successful building up from a small beginning of the good and lucrative trade which he enjoyed at the time of his death. He was no less a model in all the walks of life, and enjoyed as a citizen the respect and esteem of all who knew him. His relations to this board were characterized by that modest and gentle bearing which so endeared him to every one, and by his death this bank has lost a true and staunch friend, and this board a safe, prudent and wise member."

Resolved, That his family have our sincere sympathy in their great loss, and that a copy of these proceedings be furnished them by our secretary, and that we attend his funeral. By order of the board. A. W. HARRIS, Cashier.

A meeting of the friends of the late B. H. Stief, of Nashville, was held on Monday at the rooms of the New York Jewelers' Board of Trade. H. Untermeyer was elected chairman and Wm. Bardel, secretary. Upon motion a committee of three was appointed, with instructions to draw up proper resolutions and to deliver a copy of the same fittingly engrossed to the widow of Mr. Stief. The committee appointed consisted of A. K. Sloan, J. Hammershlag and Wm. Bardel, the chairman, H. Untermeyer, to act ex-officio.

NELSON PITKIN STRATTON.

Nelson Pitkin Stratton, one of the pioneers of watchmaking in Waltham, died in Philadelphia, Pa., on April 26.

He was born in Marshfield, Mass, seventy-one years ago. When thirteen years of age he was apprenticed to J. F. Pitkin, the original maker of American watches, and afterward worked at his trade in Springfield and Boston, Mass., and Brattleboro, Vt. In Boston, Mr. Stratton with A. L. Dennison formed the Boston Watch Company. In 1853 the company moved their plant to Waltham, and in the following year sold it to Royal E. Robbins. It then became the American Waltham Watch Company.

In 1859 Mr. Stratton, C. F. Mosely, A. L. Denelson and E. C. Brigham organized a watch company and established a factory at Nashua, N. H., which, after a year, was merged with the American factory at Waltham, and is conducted to this day as a branch of the works and known as the "Nashua Job." The deceased then entered the employ of the American Watch Company, and for sixteen years was its foreign purchasing agent, having an office in London. He afterward filled a similar position for the Elgin National Watch Company for about two years, at the expiration of which, on account of failing health, he retired from active business. He lived in Waltham until about two years ago, when he moved to Springfield



[The Circular is not responsible for the opinions or statements of contributors, but is willing to accord space to all who desire to write on subjects of interest to the jewelry trade. All communications must be accompanied by a responsible name as a guarantee of good faith. No attention will be paid to anonymous letters. Correspondence solicited.]

AN OPEN LETTER TO THE TRADE.

To my Fellow Brothers, the Retail Jewelers:

Gentlemen—Of all branches of trade and commerce is there one that is so much cut up and spoiled as the retail jewelry trade? Assuredly not. Why? Who is responsible for this? Ourselves. What is the use of learning a trade, risking capital, paying high rent and high salaries to help and cutting down prices to nothing? What is the use of advertising to clean a watch for 75 cents or $1, or put in a glass for 5 or 10 cents? Can you get more trade by so doing, or do you ruin your own reputation as a practical workman and that of others? You may think I am selfish in giving vent to these ideas, but if all my fellow craftsmen are willing to stand what this is coming to I am. Where is the man who does not like to get fair wages for his toil? Should we not get as much to do if like other tradesmen we had an understanding to that effect? It may be answered that we have leagues and societies that are fighting for this, but are they sufficient? From my point of view a local jewelers' league would be far more effective. Rich firms may get along without this, but why should they, as well as smaller shops, be obliged to work for nothing? It belongs to them to start this move in their respective localities on account of their greater influence. They surely will meet with the least resistance from the smaller shops. We would then all get the same amount of work, make as many sales and get fair value from the same. This would secure us a living, but we cannot entrust it into lawyer's hands for collection. I would be pleased to hear the different opinions, and am willing to submit to general decisions. Subscriber.

San Antonio, Texas, May 9, 1890.

To the Editor of the Jewelers' Circular:

Can you inform me whether there is such a concern as the Jay Gould Mfg. Co.; they are evidently parties who make or repair watch cases. If so, where are they? The reason of my inquiry is as follows: About a month ago I received a watch by mail which does not belong to me; it came in a box in which I had evidently received material from the Waterbury Watch Co.; that is how my name came on the box. I probably used that box to send away something, putting a wrapper around it; after me some one else used it, as is evidenced by shellac on the box, something I never use for sealing. It came to me this time without a wrapper, merely held together by a rubber band. When the postman brought it I opened it and found a lady's watch, with a piece of business card from some employment agency in Helena, Montana. Written on the back was Jay Gould M. Co. Fix back case so it will stay closed; endorsed in pencil at the bottom is "No Charge," showing that it was done. The watch is new, having the dealers mark still on, but that it was sold is shown by the case being engraved.

I want to find out who owns it so that I can return it to him, both he and the party who fixed the case are very likely at logger heads about it, but I will not surrender it without proof of ownership. If you can suggest some way of finding the owner I wish you would do so. Respectfully yours, C. K.

[Upon inquiry at the Post Office we learn that the best, in fact, the only course for you to pursue, is to send the watch under cover by registered mail to the superintendent of the Dead Letter department of the Post Office at Washington, D. C, with a few explanatory words. He has undoubtedly received inquiry from one of the parties as to its whereabouts. If he delivers the watch to anyone it will be either the owner or the seller. When sent on its second journey the package had without doubt a covering, which must have become loosened and lost in transit, the Post Office putting the rubber band about the box, as is their custom in such cases.—Ed.

Philadelphia, Pa., May 12, 1890.

To the Editor of the Jewelers' Circular:

Can you give us the name of party manufacturing sterling silver small wares, who uses a swan as a trade mark or something that could be construed as a swan?

Yours, Geo. Eakins & Sons.

[The swan does not form the whole trade-mark, There is another portion, which you have failed to decipher, and without a knowledge of which it is impossible to trace the manufacture. If you will send us the silver piece, or a diagram of the missing portion, we will doubtlessly be able to answer your query to your satisfaction.—Ed.]

WHO CAN ANSWER THIS QUESTION?

Belfast, Maine, April 9, 1890.

To the Editor of the Jewelers' Circular.

We have a very ancient 8 day clock, marked on dial "Paul Rogers Berwick." Can you inform us when and where such a maker worked? Hiram Chase & Son.

SAUNIER'S TREATISE AT A BARGAIN.

Eastport, Me., May 8, 1890.

I have a copy of Saunier's Treatise on Modern Horology, and just as good as new, as I have always kept it covered. I paid $15 for it, and now desiring to get some other book will sell it for $10.

S. C. Scantlebury.

Valparaiso, Ind., May 8, 1890.

To the Editor of the Jewelers' Circular:

Some of the papers published that I had sold out and moved to Chicago. I can still be found at my old stand; was only investing my surplus cash in the famous World's Fair city.

Truly yours. J. A. Walker.

BACK NUMBERS TO BUY AND SELL.

Madison, Me., May 3, 1890.

I have a spare number of June, 1886, which I should like to exchange with some one for a January number of the same year.

T. F. Manter.

Would like to buy copy of October, 1889, issue of Circular.

"X," care Jewelers' Circular.

Honeoye Falls, N. Y., May 5, 1890.

I have Vols. 9, 10, 11, 12, 13, 14, 15, 16, 19, 20 of The Jewelers' Circular; also first 9 numbers of Vol. 17, last 6 numbers of Vol. 18, and last 9 numbers of Vol. 8. Have extra numbers 8, 9 and 11 of Vol. 16, and number 7 of Vol. 18, all in first-class condition. I desire to sell these valuable books and would like to receive offers.

James Southgate.

Engraving on Steel.—Lightly heat the metal, and cover it with a layer of beeswax; hold it over a smoking flame to blacken the wax, which enables the lines about to be drawn upon it either with a pin, pen, or point to be seen better. This done, run nitric acid diluted with twice its volume of water, over the lines laid bare. Be careful to spread the liquid of a uniform thickness. The operation should be finished in about three minutes.

OUR TRADE ORGANIZATIONS

OHIO WATCHMAKERS' AND JEWELERS' ASSOCIATION.

SEMI-ANNUAL MEETING CALLED AT TOLEDO, JUNE 10TH—IMPORTANT MATTERS TO COME UP.—ARE WATCH CLUBS DOOMED?

THE Ohio Watchmakers' and Jewelers' Association will hold its next semi-annual meeting in Toledo, on June 10th. The secretary, E. G. Lohmeyer, has issued the following circular to the members:

NEWPORT, KY., May, 1890.

To the Members of the Ohio Watchmakers' and Jewelers' Association:

I have the honor to again assemble the craft to the Eighth Annual Convention as one body, to further our common interests and to see what has been done, and what can further be done, to bring the standard of our business to where it belongs; also to discuss intelligently new features that are continually springing up around us, good, bad and indifferent.

That this Convention will be very important is known by all that make it a point never to miss a meeting; also by the report of a certain United States Assay, ordered made at the last Convention. Another great feature is alone worth the while, and that is the accomplishment by the Cincinnati members, as a body, with the Secretary's offcial assistance, which was the successful prosecution to suppress those nuisances, the "Lottery" Watch Clubs. The decision in full of the Hon. Judge Ermston is herewith sent you, and it is here proper to consider the able prosecution of the case by the Hon. Gideon C. Wilson, of Cincinnati, O.

The "Boody House" has been selected as headquarters at the rate of $3 00 per day, but the Committee has also arranged with the "Burnet House" to accommodate jewelers at $2.00 per day single, and $1,75 double (two in bed.)

I have been able to get Special Railroad Rates all over the state of Ohio to this Convention. It is the interest of every jeweler to let that fact be known in his city, so to swell the number (members, non-members or anybody can use the advantage). For further instructions read carefully my "NOTICE TO MEMBERS," and also the Sample Copy of Railroad Certificate sent herewith.

The Annual Election occurs also at this Convention, and we wish you to consider that.

You will find your notice of dues (if you owe any) now due, which system has been in vogue one year and has proven satisfactory.

The Convention will assemble at headquarters at 11 o'clock A. M., Tuesday, June 10th.

Begging you all to stir yourselves and fight for that which we demand, I am, most obediently,

Your humble servant,

ED. G. LOHMEYER, Secretary.

Among the questions which are to come up at the meeting are the watch club lottery nuisance and the disposal of watches and jewelry through express agents, which, it is alleged, has become a crying evil in all parts of the country. At the last meeting a committee was appointed to investigate this express agent nuisance and take measures to apprise the companies of the extent of this practice on the part of their employees, and ascertain whether it is done with official sanction. One Chicago wholesale jewelry house, it is claimed, has been making a specialty of this class of trade, sending out circulars to express agents all over the country, urging them to interest themselves in the sale of watches and jewelry to private parties. The watch club lottery scheme has been dealt a severe blow by the recent decision of Judge Ermston, of Cincinnati, against the Russell Bros., due entirely to the energetic prosecution of the Ohio Association; a full text of this decision has been published by the secretary of the Association for distribution among the trade, under the title "Watch Clubs Doomed," and is appended.

The facts which led to the prosecution are briefly these:

Within the last few months several jewelers in Cincinnati have been engaged in establishing what are known as watch clubs, by means of which they have been able to dispose of their watches at greatly enhanced prices. The mode of operating these clubs (1) was as follows: The jeweler would have published and circulate a circular advertising a scheme by which any person could obtain a thirty-two dollar watch for one dollar. He would then employ a number of solicitors and send them in all parts of the city, soliciting persons to become members of what the solicitor called a watch club, and to pay them the sum of one dollar, and sign a contract agreeing to pay to the jeweler the sum of one dollar per week for the period of thirty-two weeks, at which time those who had not been fortunate enough to draw a watch at one of the drawings, would be given a watch. They would instruct such person to be at the jeweler's place of business on a certain evening, at which time a drawing would take place, and if such person was fortunate enough to have his number come out of the hat or box last, he would then be entitled to receive a thirty-two dollar watch for his investment of one dollar. Otherwise, he could continue his weekly payments and participate in the weekly drawings until he drew a watch.

This particular manner of doing business was not at all satisfactory to the Ohio Watchmakers' and Jewelers' Association, and, as a consequence, the Cincinnati Branch of that organization determined to test the legality of that manner of doing business, and if found illegal, to prosecute the offenders. They thereupon consulted and employed the Hon. Gideon C. Wilson as their attorney, to prosecute those engaged in that line of business. The first arrest made was that of James M. and Walter A. Russell, who are engaged in the jewelry business at No. 13 Arcade, Cincinnati, and who, as the affidavit charged, were engaged in conducting the Russell Brothers' Watch Club. Judge Alfred Yaple represented the Russell Brothers. After several preliminary skirmishes on the questions of law involved, the case was finally submitted to the Court, and Judge Ermston decided the case, delivering the following opinion, at the conclusion of which he sentenced each of the defendants to pay a fine of $200 and costs, and to serve a term of ten days in the work house.

OPINION OF JUDGE ERMSTON.

The defendants in this case are reputable business men engaged in doing a jewelry business at No. 13 Arcade, in this city. From the argument of counsel for defendants, solely, the Court is informed—and this conclusion is not derived by the Court from the consideration of the testimony—that certain manufacturers employing a man by the name of Smith, induced the defendants, James M. and Walter A. Russell, to engage in the business of forming a watch club, under the title of the Russell Brothers' Watch Club, by unfolding to them the scheme of procuring subscribers thereto and the subsequent method of procedure. The first step in the venture, after the defendants had been solicited, as the Court assumes, by this man Smith—a very mysterious character and personage of whom we have heard considerable, but have not had him upon the stand as a witness in the case, either upon the part of the defence or upon the part of the State—was the publication of a circular by the defendants, the Russell Brothers, describing the manner in which a $32.00 watch could be obtained for $1.00. The circular discloses the unmistakable ear-marks of a chance scheme, distinguishing it very clearly from a legitimate business advertisement, which has for its object the attraction of the attention and the awakening of a desire to realize the alluring promises upon the part of the public. Solicitors were engaged—one originally by Smith, but afterwards, from his own testimony, engaged by the Russell Bros., specifically by Walter A. Russell, and paid either a commission or a salary, not by Smith but by the defendants, and the business of obtaining subscribers to the club was vigorously carried on, and at five drawings which were conducted in the store-room of the defendants and in a room on Fifth Street, which were all attended by the defendant, Walter Russell, five persons became the possessors of one watch each. The members of the club who were disappointed at the result of these drawings—according to the explanation offered one by careful consideration of the testimony—if desirous of continuing their membership, and it was made obligatory under the terms of a so-called contract, so to continue or lose their money—were to pay in weekly the sum of one dollar, until thirty-two dollars had been paid, and then a watch was to be returned for that sum invested in the enterprise, in the event that

the subscriber was not fortunate enough to do what? To draw a watch at the weekly drawings.

The defendant, Walter Russell, was at these drawings receiving the money; was engaged in writing names upon slips of paper, or had a book under his control which contained names, and called off names of the participants in the drawing.

The testimony is to the effect that James Russell received the sum of one dollar from one of the witnesses in the case, and that receipt signed by the initials J. M. R., testified to by the witness as having been written by J. M. R., is in testimony and marked Exhibit E.

The drawing was conducted by the club as having been completed to the maximum of forty-two persons, but it may be well to state, before proceeding into a description as to how the drawing was conducted, and it was so testified by the witnesses upon the part of the State, that the Russell Bros. Watch Club was composed of Walter A. Russell and James M. Russell.

The names of the persons composing the club were then written in a book with numbers set opposite to the names, and the numbers were then written on slips of paper and closed in envelopes, or if not enclosed, were then put in a box and held by some member of the club above the heads of the surrounding party, and were then drawn singly from the box and called off by another member of the club. This method was pursued until the last number was drawn from the box and called off, that being supposed to do what? To be the fairest way to make the drawing. Then the name of the person upon the book opposite the lucky number was declared to be that of the lucky person and the drawer of the watch.

The defendants are charged in the information upon three counts. First, with carrying on a lottery, as owners Second, with carrying on a lottery, as agents. Third, setting to sale a gold watch by means of a scheme of chance called a lottery.

Now, what is a lottery? A lottery is a scheme, device or game of hazard whereby for a small sum of money or other thing of value, the person dealing therein, by chance or hazard or contingency, may or may not get money or other thing of value of greater or less value, or in some cases no value at all from the owners or managers of such lottery. And the Courts have held that it is immaterial whether there be any blanks or not in the distribution of property, whether it be money or chattels or real estate, but they have universally and uniformly held that if the element of chance is introduced into what would otherwise be a fair, legitimate business transaction, it comes within the statute, and the public prosecutor may proceed to prosecute individuals who are engaged in conducting a scheme the kind of which is defined by the term lottery, and to which I have just referred.

It has also been held by the Courts that it may have been set on foot for the purpose of disposing of property.

Council have claimed that this is a meritorious institution, for the reason that under the system adopted by the Russell Bros., twenty people would get a watch, whereas in the ordinary business transacttons of the community and in the ordinary history of such transactions, only one person would buy a watch.

The element of chance evidently induced these persons who composed the Watch Club—the forty-two members of the club that was created by the brain of Smith, and set on foot by the money and business standing of the Russell Bros.,—to purchase tickets in the expectation that when the drawing advertised took place, they would be the ones whose names should come last out of the box, or out of the hat, or whatever it was out of, which these numbers were drawn, and thus by the payment of one dollar they could secure a watch, whereas ordinarilly they would be obliged to buy a watch in the ordinary course of business, and pay for it at the regular rates. And the Court is sustained in that conclusion by all the testimony in the entire case, for the reason that all of them testified that they were induced to go into it by reason of the scheme of chance—that is, exclusive of the testimony of two or three witnesses who were hired by jewelers engaged in conducting their legitimate business to become members of the "Club,"—that they were induced to go into the scheme by reason of the element of chance, and because they were of the opinion that by paying the sum of one dollar, their name would come out of the box last, and they would secure a watch for that sum. One witness testified his name came out of the box last, and by paying one dollar, he got a watch valued at thirty-two dollars.

Now, having set on foot this scheme for the purpose of disposing of this property, clearly, but for the chance and the hope excited by the chance, these persons who have testified and the persons composing this club, would not have entered into that scheme, and the Court is the more firmly fixed in that opinion by reference to the argument made by counsel for the defense, in which counsel used the following language: that "twenty persons could get a watch by this scheme—"counsel in his argument declaring it to be a scheme—"when in ordinary course of business only two would get but one watch." The Court agrees with counsel for the defendants in that conclusion.

Another element of chance enters into it by reason of the fact that when the subscriber signed that contract, he did not know when he would get his watch, for the reason that he paid his money in for the purpose of taking a chance—hoped that his name would come last out of the box, and he had no assurance other than that based upon the well-known business reputation of the Russell Bros., that if he paid in $32,00 he would ever get a watch.

He only knew that he had a chance before the final number 32 was drawn out of the box, of getting the watch, and was uncertain, as I said before, that he would then receive a watch, other than for the confidence that he had in the representations of the agent of the Russell Bros., who came to see him.

It is not material what sort af a name may be given to the institution; whether it be conducted under the style and title of the Russell Bros. Watch Club; whether it be called a Watch Club Co.; whether it be called a Lottery; whether it be called a Raffle, or whether it be called anything—because the name given to the process and the form of machinery used to accomplish the object are not material, provided the substance of the transaction is a distribution or disposition of the property by lot or by chance. And in concluding that sentence the Supreme Court of the State of New York, used this language, that where a pecuniary consideration is paid, and it is determined by lot or chance—and in this case there can be no question but that the right and ownership of several of these watches was determined by lot or by chance—when a person is to receive anything of value for it, either before or at the conclusion of drawing of a series of numbers, it is a lottery within the meaning of the statute.

A division of property, under some circumstances, may be made by lot, and yet not be a lottery. History shows several instances where property has been parted and divided by lot. Sacred history contains several instances, as counsel may well determine by an examination of the Twenty-second psalm; Twenty-seventh Matthew; First Acts and the Sixteenth Chapter of Leviticus, where property was divided by means of a drawing, or by means of casting of lots. But in those cases the element of chance wasn't so apparent as it is in this case, because there was an equal division of property. If in this case the element of chance having been the inducement held out to the person to subscribe his name to a contract to be present on every Tuesday night at the time that the drawing occurred, the statement made to the subscriber to the contract that he, by paying one dollar, might draw a watch that night, the additional inducement held out to him that he could get watches any way after he had paid $32,00 into the club, the fact that after those people came into the office, or into the room where the drawing occurred, and there was a drawing, and it having been determined by the members of the club and by the Russell Bros, and by Smith, that the fairest way to do was to have the last name or the last number drawn from the box the one that would get the watch—that being the fairest method of drawing—certainly the element of chance was offered to the individual to draw, and the element of chance was put into practical operation at the time of the drawing; and for those reasons the Court has arrived at the conclusion that if there was not a lottery under the first section, or under the first count of the information, if they were not the owners of an actual lottery, or if they were not the agents of an actual lottery, certainly the Russell Bros. were engaged in promoting a certain scheme of chance which would be actually a lottery, whereby they set on foot a scheme to expose and set to sale the certain gold filled watches that have been testified to and described in the circulars of the firm, that were scattered broadcast over the State and to the public. The Court is, therefore, of the opinion that the defendants are guilty of setting to [illegible] a thing of value. The Court determines the defendants are guilty under the [illegible]d count of the information.

ANNUAL MEETING OF THE JEWELERS' SECURITY ALLIANCE.

THE seventh annual meeting of the Jewelers' Security Alliance was held at their office, 170 Broadway, New York, May 6. In the absence of the president, the meeting was called to order by vice-president A. K. Sloan, and business commenced with the reading of the minutes of the last annual meeting. The next business in order was the reading of the report of the treasurer. It showed a sufficient surplus on hand to ensure the members thorough protection in case of burglary.

The report of the Executive Committee was then presented, and approved as read by chairman J. B. Bowden. It was as follows:

NEW YORK, May 6, 1890.

Mr. President and Gentlemen of the Jewelers' Security Alliance:

Another year having rolled around we find it our duty as well as pleasure, to make to you this, our Seventh Annual Report, and we, with pride, point to the record of your organization. Think of it, over 900 members, located in almost every city in the United States, and not one of them burglarized during the year. When you consider that there have been at least twenty jewelers burglarized, and not one of our members are on the list, does it not speak for itself? Is it not strange that so many still remain outside of our organization. Are they not unjust to themselves? Urge your friends to join us, not for our benefit, but for their own. Your committee find that with the surplus now on hand it will not be necessary for the coming year to collect the annual dues from the members that joined the organization in the first two years of its existence, 1881 and 1884, and, therefore, have ordered, that they be placed on the free list for the year now beginning. Next year we expect to add the membership of '85 and '86 to the above list and so continue until eventually all of our members, after having paid dues for two or three years, will practically remain members without further cost. Your committee have transacted all business necessary to the interests of the Alliance at the thirteen regular and special meetings held by them. We have admitted to mem-

bership 110, dropped from the roll, 30, and our present membership is 903. Our thanks are due to the trade journals for the interest they have taken and the many complimentary notices they have given us. One thing we must impress upon you. Do not fail to report at once to the proper parties in case of robbery; every minute is valuable. The Alliance was formed to benefit the jewelers of the United States, and gentlemen, until we have on our membership roll every jeweler of good standing in the trade, our Alliance will not be complete. Therefore, we urge every jeweler to join us. The Alliance is no longer an experiment. It has demonstrated that it is a necessity to the jeweler.

Respectfully submitted,

THE EXECUTIVE COMMITTEE.

The election of officers being next in order, the Chair called for nominations for President. David C. Dodd, Jr., was unanimously re-elected. A. K. Sloan, Henry Hayes, and David Untermeyer were unanimously elected first, second and third Vice-Presidents, respectively. Chas. G. Lewis was then nominated for Treasurer, and Geo. H. Hodenpyl for Secretary. Both were unanimously elected.

There being three vacancies in the Executive Committee, J. B. Bowden, F. Kroeber and Silas Stuart were nominated, and unanimously elected to fill them, each for a term of two years. Bernard Karsch was nominated as member of the Executive Committee, in place of C. J. Alford, who resigned, and was duly elected. The Chair appointed Chas. F. Wood and Frank M. Welch as Examining Finance Committee for the ensuing year. A vote of thanks was extended to the different trade journals for the reports of the meetings they have published during the year.

After the meeting the Executive Committee met and organized themselves, re-electing Mr. Bowden as chairman.

A special meeting of the Executive Committee was held at the Alliance Office on Friday, May 2d.

There were present David C. Dodd, Pres.; A. K. Sloan, Vice-Pres.; J. B. Bowden, Chairman; Chas. G. Lewis, Treas.; Messrs. White, Butts, and Geo. H. Hodenpyl, Secy.

The following were admitted to membership: S. S. Dodge, Dixon, Ill.; Frantz & Opitz, New Orleans, La.; Clarence H. Shafer, Cobleskill, N. Y.

Jewelers' Circular Publishing Co.,

At the Annual Meeting of the Jewelers' Security Alliance, held at the Alliance office, on the 6th inst., it was moved and carried, that "a vote of thanks be sent to the different trade journals for the reports of the meetings they have published during the year."

Yours respectfully, GEO. H. HODENPYL, *Sec'y.*

THE JEWELERS' LEAGUE.

AT THE regular monthly meeting of the Executive Committee, held on Friday, May 2d, there were present Messrs. Howe, Greason, Bardel, Jenks, Houghton and Sexton.

Dr. F. Percy Jenks, Brooklyn, was appointed additional examiner for the League.

The President announced the appointment of the following gentlemen as members of a Special Committee upon half rate membership: Edwin H. Brown, G. M. Van Deventer, J. W. Beacham, W. H. Jenks and A. A. Jeannot; the Secretary, Wm. L. Sexton, to act ex-officio. There were four changes of beneficiary granted, one application was rejected, three were laid over for investigation and the following persons were accepted as members: Chas. J. Degavre, Newark, N. J., recommended by Louis Lelong; Achill Bippart, Irvington, N. J., recommended by J. B. Woolsey; F. W. Bliss, Newark, N. J., recommended by M. L. Bowden; J. G. Daneck, Newark, N. J., recommended by J. B. Woolsey; Albert G. Elliot, Spring Grove, Fla., recommended by D. Greenleaf; Henry G. Goldschmidt, Davenport, Ia., recommended by Wm. Bardel; Henry H. Leibe, Newark, N. J., recommended by J. B. Woolsey; Chas. H. Smith, Irvington, N. J., recommended by F. H. Miller & S. W. Pickering; Joseph Stadlmeyr, Newark, N. J., recommended by F. H. Miller & S. W. Pickering; Adolph Staib, Baltimore, Md., recommended by J. M. Thien & F. W. Kakel; Charles S. Sutter, St. Paul, Minn, recommended by A. Pinover; J. W. Urwitz, New York City, recommended by A. Roseman.

THE NATIONAL ASSOCIATION OF JOBBERS.

During the past month, the following circular was issued to the members of the association. The first line was printed in red ink.

IMPORTANT! READ CAREFULLY!

The National Association of Jobbers in American Watches.

NEW YORK, May 8, 1890.

No. 76.

GENTLEMEN—In consequence of the constant complaints of the cutting of prices on association goods by outside jobbers and manufacturers, the sub-committee have adopted the following new rule which goes into effect immediately, and takes the place of resolution 12, on page 19, of the constitution and by-laws:

Resolved, That it is contrary to the spirit and rule of the association for any member to supply any association goods, either by sale or exchange, at any price or on any terms, to wholesale dealers not members of the Jobbers' Association, or manufacturers of cases, movements, jewelry, &c., not in co-operation therewith, or to supply such goods to anyone who it may be reasonably supposed will sell them to such parties.

This rule is formulated in the best interest of the association, will be strictly enforced, and the members are earnestly called upon ta give it their hearty support.

Extra copies may be had for your travelers, if desired, on application to the secretary, and a copy prepared for hanging in your office will be sent in a few days.

Yours truly,

JAS. H. NOYES, Secretary and Commissioner.

The secretary has notified the members that the United States Company is no longer in the Association as a co-operative member.

NOTES.

At the regular meeting last month of the New York Jewelers' Board of Trade, Frank H. Richardson, of Enos Richardson & Co., tendered his resignation as a director, and O. G. Fessenden, of Hayden W. Wheeler & Co., was elected in his stead. The Board have thus far collected $240 toward defraying the expenses of the passage of the Torrey bankrupt bill.

The Dominion parliament, in its tariff revision, having increased the duty on watch cases to thirty-five per cent., the Canadian Association of Jobbers in American Watches have dropped cases from their list, and akeen cutting in prices by individual jobbers being indulged in. It is probable that a meeting of the Association will soon be held for the purpose of considering a request of the watch case makers to be restored to membership.

The first annual session of the Retail Jewelers' Association of Missouri will be held in St. Louis, on June 4. A large attendance of jewelers from all parts of the State is anticipated, as, owing to the June races, low rates of fares will be granted on all railroads entering the city.

CINCINNATI

[FROM OUR SPECIAL CORRESPONDENT.]

CINCINNATI, May 17, 1890.

The jewelry trade of this city, wholesale and retail, has been and continues good. Some of the jewelers say that they never have had so good a trade as they have had thus far this year. In looking over the list of jewelry manufacturers that have started in business the past year or two we find quite a number, and all are busy. Old firms have separated and started anew, and in every instance they have more than doubled their capacity for manufacturing and still

are as busy as they can be. Thus we learn that the jewelry manufacturing interest has more than doubled in a short space of time. The question was asked a prominent jeweler why this increase. His reply was that Cincinnati was centrally located and that the tide of trade had turned this way, and in all probability would continue to do so until this market would be one of the largest in the West. The trade are reaching out for business in every direction, and will evidently get their share.

One of the most nervy, daring daylight diamond robberies on record in this city was that of the Michie Bros. robbery which occurred the early part of this month. It was a most skilfully managed affair. The feat was performed about 11.30 in the morning while the store was filled with people. At the hour named a small, dark-complexioned, black-moustached, hollow-cheeked man called at Michie Bros. jewelry store on West Fourth street and asked to look at some rings; he wanted a diamond ring for his best girl he said. One of the proprietors waited on him. He leaned on the counter examining carefully two rings, when presently he grabbed the tray and ran to the door. An accomplice on the outside quickly fastened the door with some sort of a device, but in his hurry did not succeed fully. Mr. Michie followed in hot pursuit, and was able to open the door after shaking it forcibly. Some of the clerks joined him in the pursuit; after a race of several blocks the accomplice was captured, but the man with the tray succeeded in making good his escape. In the tray there were sixty rings, but the thief spilled thirteen of them at the door but escaped with the others, about forty-two in number, and valued at $3,000. As yet no clue to the thief or diamonds has been obtained.

Michie Bros. are enjoying a most excellent trade. They are one of the old established jewelry houses, and make a specialty of the manufacture of Masonic and society emblems for which they have an extensive trade. They have quite a reputation for producing unique and handsome designs.

Trade continues very good with the John Holland Pen Co. They say they have no reason for complaining. Their fountain pens have achieved a great reputation.

E. & J. Schweikert, of West Fourth street, extensive dealers in watch materials and tools, maintain a repair department well manned with expensive watchmakers Their facilities for carrying on this business are not to be exceeded in the West.

Mr. H. Keck, Jr., has left for Europe for the purpose of purchasing diamonds and other precious stones. He expects to visit the cities of London, Paris, Amsterdam and other important points. He intends to be away about three months. The concern of which he is a member, the H. Keck Jewelry Co., are having an excellent trade. Their factory was burned some months ago, but they are now established on Fourth street, fully equipped with new and improved machinery and with largely increased facilities.

The American Jewelry Co. have discontinued their auction sales and propose to continue the business at the same stand, entering more into the diamond business.

Awalt & Co., who have been selling at auction in order to reduce their stock, have also discontinued.

Jos. Noterman & Co. continue to enjoy their usual good trade. They employ none but the best workmen, so that the goods they make are always fully up to the standard.

Jonas, Dorst & Co. have largely increased their facilities for manufacturing jewelry this spring, and are working their full capacity all the time.

It is very seldom that a good thing is obtained free of expense. However, once in a great while a spirit of magnanimity does possess some one, as in the case of Oskamp, Nolting & Co., of this city, who have gone to great expense in preparing their new mammoth catalogue. It will be ready in July, and every subscriber will get for nothing something that he cannot have made for less than ten dollars.



[From our Special Correspondent.]

Chicago, May 19, 1890.

The labor troubles which have recently threatened the prosperity of Chicago, and promised seriously to retard all business operations have happily been settled, and the danger and inconvenience arising therefrom are, for the present at least, averted. The prospect has brightened considerably, and there is every reason to believe that the city is entering upon an era of prosperity which will surpass anything in its history. The jewelry business generally, in conjunction with other departments of commercial activity, will certainly enjoy great advantages, largely owing to the selection of Chicago as the site for the World's Fair. There is no doubt that the unusual activity in the real estate and building market is largely due to the World's Fair.

The new rooms of the Jewelers' Association are fast approaching completion, and will certainly be as desirable a suite of office and assembly rooms as could be desired. An evening in the near future has been set apart for the formal opening and presenting to the president for the use of the members generally.

One of our friends, Sam. W. Dripps, of Benj. Allen & Co., has had his fishing experience already this spring, to wit: A few days ago W. J. Sparrow, of Stern & Fried, suggested that they go up to the lakes for a day or two. They started, took the usual rod, a little box of bait and——Sam caught the finest black bass that we have ever heard of, but unfortunately he did not get it back with him. He was sorry that business compelled him to return, leaving friend Sparrow still angling for the fish that made away with his jack knife.

If the business of the various branches of the Towle Mfg. Co. all make as good a showing upon comparison as the Chicago branch, there is good reason for the increasing of manufacturing facilities at present under way at Newburyport.

F. H. Noble & Co., jewelers' supplies, have added twenty experienced workmen to their force within the last three months. They report a constant increase of business.

Mr. Schnering, of Otto Young & Co., reports the same old story —business first-class—and a visit to the house certainly confirms his statement.

A feature in the new stock rooms of the Gorham Mfg. Co. is a burglar-proof room, in which have been placed several of the largest sized Hall jewelers' safes. Mr. Prentice reports trade good, and says he is hardly able to get goods fast enough to fill orders.

Among some of the jewelers in the city the past week were: Chas. Fay, Peoria, Ills.; J. H. Ishem, Duluth, Minn.; Mr. Rose, Bay City, Mich.; J. W. Spence, Racine, Wis.; J. Brown, Fayette, Iowa; H. E. Blasier, Fayette, Iowa.

A. G. Tellner, of Jamestown, No. Dakota, has been out taking a look through the works of the Elgin Nat. Watch Co. at Elgin during his visit to Chicago.

Mr. Cutter, of the Elgin Watch Co., says the present production of the factory is up to its fullest capacity, and still it is impossible to keep a supply of movements in reserve. The general offices of the company, situated in the American Express Building, Chicago, are being considerably enlarged. The rooms will be entirely refitted and decorated in the latest and most artistic manner.

The Illinois Watch Case Co. are busy moving to and settling in their new factory at Elgin, Ills. They expect to have everything running in good shape by June 1.

Your readers are all, no doubt, pretty well posted on the facts of the Clapp & Davies failure of a few years ago. The matter of settlement is still being agitated, and Mr. Meacham, trustee for the creditors in the matter, informs me that they (the defendants) received a set back by the decision of the Supreme Court in a parallel case which was taken up to this court to decide a point, the general principle for which they were contending. A loophole was left and the case will not be dropped, but will be still further prosecuted and taken to the federal court, if necessary.

M C. Eppenstein & Co. are about settled in their new quarters, second floor, Mentor Block. No more desirable office or warerooms can be found in the city.

Mr. Norris, of B. F. Norris, Alister & Co., says the report current about the robbing of their Mr. Robinson's sample trunks at the depot at Waverly, Iowa, is correct. The loss will probably reach several thousand dollars. Fortunately the trunks were insured in the Jewelers' Safety Fund Society for the sum of $7,000 each. This firm have secured new quarters at 113 and 115 State street, taking in two entire floors, 50x155 each. The first floor will be used for their jewelry business generally, and the second for silverware exclusively, this firm having recently taken the western agency for the Middletown Silver Plate Co. The rooms will be wired throughout and a complete system of incandescent lighting will be put in. A corps of painters and decorators are at work, and in a few days everything will present a splendid appearance.

Beginning next Saturday the wholesale jewelry houses will commence the early closing movement, all the houses closing at 1 o'clock every Saturday during the summer. Of course, the employees are not at all sorry, as it is the season for base ball aspirants, and this afternoon off gives the boys of the local nines of this year a chance to pose as professionals next.

The Geneva Optical Co., 23 Washington street, are, as usual, pushing the optical trade with energy, and report a largely increased trade this spring. Such a state of things is to be expected, as this company's superior facilities enable them to supply a dealer with everything in the line of spectacles, eye-glasses and general optical goods, and to do their repairing and prescription work promptly. A dealer is thus enabled to keep his optical account with them entirely, which is much more convenient and economical to him than being compelled to scatter his business with several smaller houses.

Julius Hermann, of Nathan & Hermann, sailed for Europe this month by the *Fulda*.

Lapp & Flershem are at present busier than ever before at this time of the year, last month's business exceeding that of the same month of last year by over fifteen per cent. The old adage "We never sleep," might truly be said of this firm.

The Jewelers' School of Letter and Monogram Engraving which was opened by Wendell & Co., jewelry manufacturers, last October, since that time has met with the success it merits. The school has turned out a large number of graduates, and at present there are about twenty-five students in attendance coming from all parts of the country, all of whom speak very highly of Mr. Kandler, their instructor.

The Wendell Mfg. Company, silversmiths, newly incorporated, with a capital of $100,000, to manufacture table and art ware in solid silver, are equipping a factory at 220 Washington street, Chicago, and will have everything in readiness to produce goods for the market this fall.

The craze for "Friendship" rings has seized our friend Ternendt's customers, and orders are coming in so fast that it is impossible for him to fill them and pretend to attend to other work.

The melting, refining and assaying departments of Wendell & Co. have been enlarged. They have installed an electric motor to supply power, drive blow fans, etc., and are in a better position than ever to do special manufacturing for the retail trade. This is a specialty with the firm, who now employ about seventy-five skilled workmen the year through.

President Frink, of the Chicago Horological Institute, says they are fully settled in their new quarters, and the students are more than pleased with them. They have ample room, excellent light and every possible convenience. About fifteen new students have entered the school within the past fortnight. One young man comes from Schonach, Baden, Germany, to enter the school, being sent here by his father, a clock manufacturer in that country, to procure a thorough knowledge of the watch making business, and become acquainted with American tools and methods. This certainly shows that the school has attained a world-wide reputation.

Roovaart Bros., diamond setters and manufacturing jewelers, have induced one of the best "diamond cutters" in the West to take space in their rooms. This should certainly be an attraction for their customers.

The reception of THE CIRCULAR's representative by Mr. C. K. Giles, of Giles, Bro. & Co., is always very cordial, Mr. Giles considering THE CIRCULAR a model journal. The firm had a regular house warming when your representative called, so continual was the flow of country dealers engaged in buying goods.

The Chicago Watch Tool Company will have their catalogue and price list ready in about two weeks.

The E. Howard Watch and Clock Co. have just placed one of their finest tower clocks in the tower of the new *Inter-Ocean* building. It is a one hour strike heavy bell, and has four dials illuminated.

Mr. Corey, of the Pairpont Manufacturing Co., has fully recovered from his recent illness, and is making preparations for several days' fishing up the lakes. T. A. Tripp, treasurer and general manager of the company, spent a day in Chicago last week while en route to San Francisco.

C. Rogers, of the firm of C. Rogers & Bro., Meriden, Conn, has been spending a few days in Chicago.

The "Excelsior" signs are still in the lead, the company being rushed with orders coming from the most distant parts of the country. They are about moving into their new four-story factory on the outskirts of the city. They make a specialty of foot wheels, polishing lathes, etc., etc. The demand for their goods has become so great that it necessitated more room, and with the increased facilities now secured they feel confident they can supply the demand.

THE CIRCULAR'S OBSERVER.



[FROM OUR SPECIAL CORRESPONDENT.]

MINNEAPOLIS, MINN., MAY, 12, 1890.

The jewelers' life here is not a happy one, as the number of robberies committed against this particular branch of trade within the last few days will witness. It is not unnatural that it should be so, for most people take mightily to such things as gold, silver and diamonds, but in this case it is at the expense of the poor jeweler who has to suffer many things.

Webb & Griffin's store of Amery, Wis., was relieved of $200 worth of stamps, coin and jewelry.

Last week a young man went to Dickinson's store in St. Paul, secured a watch to take to show a young lady in one of the first class hotels, saying he wished to have her decide if it was what she wanted. The cash boy sent along to take it back in case it didn't suit, was told by the man to wait in the hall. The young man went

up on the elevator and probably down by the stairs, for he disappointed the waiting cash boy.

In Denver, Colo., April 3d, two thieves entered M. J. Mitchell's store while the proprietor was out to lunch. One engaged the attention of the young lady in charge by looking at the stock of clocks, the other stole diamonds to the value of $5,200, and both escaped.

J. M. Donelson of Minneapolis, left about four weeks ago, intending to travel with a large stock of jewelry through Montana and Dakota, on the way to Portland, where he intended to open a jewelry store. He reached Butte and decided to locate there. While absent from his hotel, his room was entered and diamonds and watches were taken which represented a value as reported by the mercantile agencies of from $7,000 to $9,000. He has since succeeded in recovering most of his property and in arresting two of those concerned in the robbery.

Judge Anthony of Chicago, has issued a capias for the arrest of Aaron Greenburg and his brother, composing the firm of Greenburg Bros. of Minneapolis. The capias was issued on an affidavit filed by Mark Streicher & Co., wholesale jewelry dealers of that city, who allege that the Greenburgs misrepresented their financial condition in order to get goods on credit.

The outcome of the seizure of the "Joseph Schwartz Loan Office and Jewelry Company's" jewelry in Kansas City some time ago, to satisfy the claims of personal creditors of Schwartz, whose credit was destroyed by the report of his arrest in Utah, promises some interesting developments for jewelers. Schwartz will fight the suit on the ground that he was simply a shareholder in the company and the goods were not his.

Mr. Schimmel, formerly of St. Peter, Minn., but for some time carrying on a jewelry business in Idaho, has been afflicted with blindness, and is in Chicago under medical treatment. It is said he may recover.

F. R Porter of Pierre, So. Dak., has entered the ranks of the jewelers.

S. J. Nygren has put in a stock of jewelry and opened in West Duluth.

C. F. Sischo of Sioux Falls, So. Dak., has removed to the more commodious quarters 104 Phillips avenue, and is now doing a good business.

At Ada, Minn., Rev. Mr. Warren has opened a jewelry store with F. O. Weygant.

Minneapolis has recently been visited by E. F. Strickland, a representative of the Chicago Branch of the New Haven Clock Company. This is his first visit after an absence of about six years. He was sent to work up the strong trade which the New Haven people have in this field.

H. F. Legg of Minnneapolis, says the retail trade is dull, but not unusually so considering the season of the year. Collections are rather poor.

Eustis Bros. feel about as Mr. Legg does—"quiet, but promising."

The retail trade has a new recruit in Stevan Sanborn, who has opened a store at 1425 Washington avenue, So.

A. Sanborn & Co., composed of Mr. Sanborn, a well known jeweler of this city, and Mr. Carpenter, are about to move into their store 26 Washington avenue.

A new jewelry store has been opened in St. Peter by M. Engesser, Jr., and is located in the Nicollet House.

A. J. Warner, of the Warner Jewelry Company of Minneapolis, says: "The jewelry trade has never been in a better condition than at present. There have been fewer failures than ever before, but we find collections very close. Our trade will probably be good in Wisconsin and Iowa and Southern Minnesota, but the South Dakotas are not so promising. Montana trade is good."

The other jobbing houses feel about as Mr. Warner does and think the outlook very good. They think, too, that with the abundance of work given this summer to all branches of trade and to laborers in this city and St. Paul, their own trade must improve as well as all others.

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Mechanical Ocular Defects.

Their Nature, Cause, Correction and Relations to Functional Nervous Diseases.

Edited by C. A. Bucklin, A. M., M. D., New York.

[The aim of the author is to produce a clear and thoroughly practical course of instruction on the subject of "mechanical ocular defects," which is entirely void of useless technicalities and within the easy comprehension of every thinking student without his having had any previous technical or mathematical education.]

IN OUR last I finished the consideration of the various difficulties encountered in the selection of lenses for near and distant vision with the myopic eye. The description given thus of ocular defects have been perhaps painfully original. In the consideration of hyperopia I propose to follow to some extent the article written by F. C. Donders, and published by the New Sydenham Society of London, in 1854.

An eye is emmetropic when, with the eye in a state of perfect rest, the refractive system will cast a distinct picture on the retina, of objects which are sufficiently distant to make the rays of light coming from them parallel. The focus of the eye may lie in front of or behind the layer of rods and cones. In the first place we have *myopia*; in the latter case it is *hyperopia*.

Myopia is a condition which has long been known and has been very closely considered. Hyperopia as it generally occurs was, on the contrary, until quite recently almost entirely overlooked. At least, its nature and results were not recognized. Once discovered and understood it quickly revealed all its mysteries, and gave the solution of a number of phenomena whose origin had until then remained enigmatical. Thus the most frequent source of asthenopia and the almost exclusive source of convergent strabismus was founded on this anomaly.

It is evident that the hyperopic eye is one, the diameter of which is too short for its dioptric system; this necessitates the use of the accommodation for all distances to prevent the retinal image from falling behind the retina. This muscular struggle which is constantly in use for the purpose of increasing the strength of the lens produces fatigue, and the symptoms of this fatigue are called accommodative asthenopia. These excessive requirements of accommodation also distrub the natural relations existing between the fixation of the eyes on a common point and the accommodation. This disturbance causes what is known as muscular asthenopia, the efforts to overcome which difficulty frequently causes the individual to discard binocular vision. Net being able to fix with both eyes, he fixes with one and draws the other eye in toward the nose until the required amount of accommodation has taken place in the fixing eye. When an individual can learn to do this without being annoyed by double vision, he is said to have learned to look cross-eyed or developed convergent strabismus as the result of his hyperopia. If he cannot learn to fix with one eye and ignore the visual impression of the other he will not look cross eyed because he has not been able to learn this trick. He will therefore continue to suffer from muscular asthenopia, which difficulty the development of convergent strabismus entirely obviates.

Hyperopia may be acquired or original. The acquired hyperopia is the result of a lost lens or the general shrinking of the tissues of the globe with advancing years; this form of hyperopia commences to develop after the age of fifty years. The original hyperopia which is always of a stationary or decreasing quantity till the age of fifty years, commences to increase slowly at that age. Hyperopia appears to be the natural condition of the eye in most of the lower animals, and we also find that the majority of young people are slightly hyperopic. The hyperopia in most instances disappears as the eye becomes more perfectly developed with advancing years.

Hyperopia of a high degree is usually hereditary. It is easily traced as existing for several generations by the statements of

patients regarding the number of ancestors who were cross-eyed; for an example, an aged person may distinctly remember two generations before him in which cross-eyes were a common defect, and he may have two generations living who show the defect. I have been greatly amused in tracing hyperopia for generations back by family photographs, which show decided convergent strabismus as being a family defect. The public very generally believe that convergent strabismus is an inherited defect, while in fact it is the hyperopia producing the defect which is inherited and not the resulting symptom of strabismus.

In hyperopia the eye has never been sufficiently developed to become of the proper length. For the above reasons the acuteness of vision in hyperopia will be found to vary widely. The eye may be faulty in its development regarding length, but the retina may be perfectly developed; in that case the acuteness of vision for degrees of hyperopia as high as $\frac{1}{5}$ will be $\frac{20}{20}$ +.

In most instances, however, the faulty development causing the hyperopia also extends to the retina, and the acuteness of vision in high degrees of hyperopia cannot be improved in a satisfactory manner by glasses. Great difficulty has been encountered in selecting proper lenses for the correction of hyperopia. The person having a high degree of hyperopia in many instances will refuse to accept during the trial convex lenses of any power. They may accept very weak lenses which are not of sufficient strength to relieve their annoying asthenopia. Hyperopic eyes obliged to strain their accommodation in order to see distant objects may involuntarily keep up the tension of the accommodation even when the proper glasses render this not only superfluous but undesirable for acute distant vision.

Donders started with the conclusion that from the strongest convex glasses through which distant vision was still accurate, he could deduce the degree of hyperopia. He however discovered that this was not always so, by discovering that at a later period the same person accepted convex lenses of greater strength than they had previously accepted. This discovery led to his experimenting with atropia on the refractive condition of hyperopic eyes. He found that the value of hyperopia in young persons was likely to be very much under estimated. These experiments were the basis of many enthusiastic discussions at later periods.

I rarely find a hyperopic person who has no tendency to look cross-eyed, who cannot by patience and care be induced to accept lenses of sufficient strength to relieve all his asthenopic annoyances. I give them plenty of time, and am not discouraged at spontaneous remarks as "I can't see any better with that glass," etc., or "I can see much better without these glasses." I tell them to take time and try, that I do not expect them to see better, and that I only wish to know if they cannot see nearly as well as they could without the glasses. They will usually relax their accommodation in a few minutes, and accept a fair correction if you only give them a little time.

Cross-eyed hyperopes require the full effect of atropia, or one who uses the ophthalmoscope with great skill. Atropia is, however, the most reliable. A few cases are encountered who have severe asthenopic symptoms but who will not accept any glass, notwithstanding a high degree of hyperopia is the cause of all the annoying symptoms; these cases must also be treated with atropia, but I must state that in my personal experience I have found very few of this last class of cases. They usually accept, with time and encouragement, sufficiently strong convex lenses to relieve their asthenopic symptoms and make them comfortable. Persons with very high degrees of hyperopia squint the lids together like a myope; they usually state that they are very myopic and wish concave lenses for its correction. Under the above circumstances it is surprising to see great improvement take place in the acuteness of vision by the use of convex lenses as high as $\frac{1}{5}$.

Persons having very high degrees of hyperopia also hold observed objects very near, which is another symptom which leads to the conclusion that they are myopic. The reason for the above peculiarity is as follows: The hyperopia is of such a high degree that the efforts of accommodation produce no appreciable benefit in the improvement of vision; consequently they are not tempted to try for distinct retinal images. They hold the work very near for the purpose of receiving more intense illumination from the object. The illumination of an object decreases as the square of the distance increases, which explains why in excessive hyperopia there is an inclination to hold the work very near.

The following table gives the shortening of the eye ball necessary to produce certain degrees of the anatomical error of hyperopia. It must be remembered that the glasses worn by an individual having hyperopia do not necessarily correspond to the amount of the error.

Table showing amount of hyperopia and the shortened axis necessary to produce it.

Hyperopia.	Straightened Axis.	Hyperopia.	Straightened Axis.
$\frac{1}{50}$	0.21 mm	$\frac{1}{10}$	1.00 mm
$\frac{1}{40}$	0.26 "	$\frac{1}{9}$	1.12 "
$\frac{1}{30}$	0.35 "	$\frac{1}{8}$	1.25 "
$\frac{1}{24}$	0.45 "	$\frac{1}{7}$	1 40 "
$\frac{1}{20}$	0.52 "	$\frac{1}{6}$	1.60 "
$\frac{1}{18}$	0.58 "	$\frac{1}{5}$	1.89 "
$\frac{1}{16}$	0.65 "	$\frac{1}{4}$	2.30 "
$\frac{1}{14}$	0.74 "	$\frac{1}{3}$	2.90 "
$\frac{1}{12}$	0.85 "	$\frac{1}{2}$	2.97 "
$\frac{1}{11}$	0.92 "		

How it is that hyperopia of $\frac{1}{12}$ in one person causes absolutely no trouble, in another person causes severe and constant asthenopia, while in a third it leads through convergent strabismus to the loss of practical vision in one eye, will be considered at length in our next.

Norristown, Pa., April 19, 1890.

To the Editor of the Jewelers' Circular:

Will you kindly explain in your next issue of THE CIRCULAR

1st. Why a Hypermetrope of 1. D., age 49, requires his reading glasses so strong as 3. 5 D, to read Snellen D=0.50 at 13 in ?

2d. With his H. and Pr. corrected what should be the smallest size of Snellen's test type he should be able to make out with an effort at 8 in.? Respectfully yours,

S. P. H.

ANSWER: The average person not having any h requires at least 1. D. for reading. Consequently the glass for this person should be at least 2. D. Any addition to this correction is due to some one of the following causes:

1. The individual could have had more h than was demonstrated by the trial with lenses.

2. The individual may have abnormally reduced accommodation from any inability of the ciliary muscle or diseased condition of the lens.

3. Mild glancoma simply makes the requirements for convex lenses higher than normal.

4. The fact that one has previously worn glasses stronger than necessary would also account for the trouble.

No answer can be given to the second question, because the result is never the same in any two individuals.

Norristown, Pa., May 13, 1890.

To the Editor of the Jewelers' Circular:

Will Dr. Bucklin, through your valuable medium, kindly give me some advice in the following case: Last February a girl, age 15, called for glasses. For the previous 9 months she had been wearing —1.12 s. given by her physician with unsatisfactory results, as she complained of pains in the eyes, both with and without her glasses.

I detected mixed ast, and believing her eyes to be in a disturbed condition from having worn — sph., I gave her + 50. sph. and instructed her to report in 2 or 3 months. She now reports the + sph. better than the — sph. previously worn, but still complains of the old pains in her eyes.

I made another examination as follows: $V = \frac{15}{50}$, and accepts + sph. up to 1.00 *D.* which gives $\frac{15}{30}$.

The darkest ast. lines then appears at *R.* 105° and *L.* 90°.

The addition of — 3 50 c. renders ast. lines all comparatively clear, and with the glasses as follows:

R. + 1.00 s. ⌒ — 3 50 c. ax. 5°

L. + 1.00 s. ⌒ — 3.50 c. ax. 165°

her corrected $V = \frac{15}{20}$ being the best obtainable, and not obtainable with weaker — cyls.

The retinoscope test shows the shadow movement to be *with* in the vertical and *against* in the horizontal directions.

Questions, 1. Is not the — cyl. element stronger than is warranted by the result?

2. Is it permissible to diagnose mixed ast, by using a sph. and a cyl. as in this case?

3. At her age and with no previous disease, should she not be enabled to read $\frac{15}{12}$?

4. In this case would you advise giving her the above glasses?

At *no time* during the trial did any line or lines appear darker than the ones mentioned above. C. Y. UNDER.

ANSWER.—The way you experimented is not the way to find out what you wish to know. When the error of refraction is very small in one meridian and very great in the other, you may after your method blunder into a practically satisfactory result.

If the person has the defect which your experiments indicate, + cylinders would have given better results than + spheres.

2. Suspecting mixed astigmatism. You should determine in which meridian the greatest error exists and fully correct this meridian with a cylindrical lens. In the above case the first correction should be a — cylinder because this is the prominent error of refraction. Having obtained the best possible result with a — cylinder you should have crossed it with a + cylinder axis at right angles to the axis of the cylinder. Having obtained the best possible correction of both meridians, you should transpose into a "mixed cylinder" meaning a + sphere ⌒ a — cylinder of greater strength. This is done according to the usual rule.

3. Irregular astigmatism frequently so complicates regular astigmatism that the acuteness of vision can not be raised to the normal stand

4. I would not give these glasses without making a careful test in the manner above directed.

You may have blundered on to the truth because the + sphere required is so weak, but in higher degrees of refraction in both meridians, the method you used is open to serious objections because as much as you improve one meridian you make the other meridian worse to a corresponding degree.

The Jewelry was too Great a Temptation.

THE party of Samoans at present being exhibited in the French capital appear to have run very close to getting themselves into serious trouble recently. Close by where they are on show in the Musée Castan there is a jeweler's shop, the window of which is a never-failing source of interest to the Pacific wayfarers. In the first place they wanted to buy the window out for the few francs they had saved among them, but, as the jeweler's estimate of the value of the goods ran to scores of thousands of francs, no business was done. The other night the Samoans seemed to have tried to force their way into the shop—through the open door, however, in which the owner himself was standing at the time. They were given in charge and spent the night in the lock-up. They were allowed to go away in the morning, however, their intentions in regard to the jewelry being, as was satisfactorily explained to the authorities, "strictly honorable."



[FROM OUR SPECIAL CORRESPONDENT.]

A LULL IN TRADE—LABOR TROUBLES THE CAUSE—EASTER NOVELTIES ABUNDANT—THE MERCHANDISE MARKS ACT STILL CLAIMING ATTENTION—OTHER TOPICS THAT AGITATE OUR ENGLISH COUSINS.

LONDON, May 10, 1890.

My enquiries as to the present condition of our trade, particularly our London manufacturing trades, have not elicited any very encouraging replies. As explained in a former letter, my opinion is that we are now reaping the effects of the too large orders given out just before the close of last year. The stocks then acquired by our retailers did not go off as they were expected to do and necessarily have been on sale since, to the exclusion of further purchases.

I have reason to believe that our London shop-keepers have had a very indifferent trade for some months past. This retail business cannot well be gauged by any other means than by the extent of orders to manufacturers. As there is now such a very wide field both at home and abroad in which these orders may be placed the difficulty in getting at the true state of the retail trade is increased. As far as the appearance of the West End shops is concerned, there is nothing to denote any decadence in trade. There is at the present time a really fine and extensive display in every department of the jewelry and kindred trades. I have been much interested by a recent inspection of some of these stocks from the outside. No one can walk through Oxford street, Regent street, New Bond street, or the Strand without being convinced that every variety of taste and every purse is amply provided with goods from which to select, and yet I learn from proprietors that the sales have been disappointing during the past month. This complaint is general, including even our large co-operative stores and supply associations so much affected by our upper classes.

We are now face to face with the fact that the bright promises with which the year opened, have not been realised.

LABOR TROUBLES.

This I consider may to some extent be accounted for from causes over which our manufacturers and dealers have had no control. The whole trade of the country has been disorganized, some industries more than others, but all have been disturbed. As you are probably aware, our entire working population have been agitating for advanced wages and have created such uncertainty that even where stocks were low, dealers have hesitated to place orders for goods, of the sale of which they did not appear to have much early prospect.

Many of our shopkeepers have made a good show of Easter specialties during the season that has just passed but it is difficult to say whether the results have been always satisfactory. Easter is usually a good time for us. The custom of Easter presents maintains and ever strengthens its hold upon the public. These presents have for the past few years given much scope to the jewelers' art and metal workers' ingenuity, and notwithstanding the dull times the past Easter has produced many novelties in this direction. It is to be regretted that there has not been a corresponding manifestation of the purchasing disposition usual at this season. Judging from the average experience of previous years I fear that many persons have gone short of Easter presents this year.

Leaving the retailers, I find the manufacturers are equally dissatisfied with their business lately, and I think they are themselves largely accountable for it. There is no doubt that orders and specially orders for export have been forced. I cannot imagine a

greater mistake than for a manufacturer to seek to induce, or for a buyer to be induced to give, larger orders than are really wanted.

To buy too much is always a mistake, to buy too much for export is sheer folly. The custom of sending out goods on consignment has been greatly abused in many industries and not the least in our own. A short time since the evil of the system was forcibly brought home to me by a New Zealand importer when on a visit to this country. He told me that it was, or had been at any rate, his practice to attend sales of "consignee" goods. He said he bought far more advantageously at such forced sales, than he possibly could under any other circumstances. Those who had the conduct of the sales had but one object :—to get what they could for the things, *quickly*. Goods are frequently sold in this manner at less than cost of production; when we remember the freight, insurance and other expenses that have been paid on them since production, we see at once the heavy loss that has been incurred. Who bears this loss? We fear some of our manufacturers could answer this question without any investigation. I do not remember any period at which our industries have been agitated on so many important questions simultaneously. The Merchandise Marks Act has been a fruitful subject of discussion for a long time and yet it is not settled. A select committee of the House of Commons has been recently engaged investigating the bearing of this act upon the watch trade. The point chiefly considered was how far there should be state interference with the marking of goods. It is admitted that the act of 1887 has checked fraud and has given an impetus to British trade. This is the result of the fact, that cheap foreign goods cannot now come into England branded with English names, unless they also have a plain indication of the actual place at which they are manufactured.

As is customary with our Acts of Parliament, however, there was the usual loop-hole for those who intended deception. The act did nothing to hinder the importation of goods without any mark. It has been found that these unmarked goods, having been dexterously carded and otherwise made up in boxes or cases, have been sold as of English make. The question now under consideration is whether *all* articles made abroad shall not be made to bear an indication of their origin. Watches were made an exception in the act of 1887. By that act it was stipulated that foreign watches should not be imported unless *they were* marked as foreign. In his evidence before the committee, Mr. Newsome, a Coventry watchmaker, said the effect of this had been to give an impetus to the English industry. What is applicable to watches is equally applicable to gold and silver articles of utility or ornament. The experience of the watch trade furnishes a strong reason for requiring that all such foreign made goods shall be marked with an indication of their foreign origin. The discussion of the question has had a curious development. There are some persons connected with the trade who want Parliament to insist that all home-made goods should be marked with the name of the manufacturer and also with the name of the place where they are made. This is too great a change to be accepted without a strong protest. There are some consumers who like to have their own name on the goods they buy, and I cannot see why large consumers should not have the privilege—if they consider it one. It is well known that we have a large number of small makers who produce solely for these large buying houses who possess a known name. These men are skilled and hard working honest men, often working harder in fact than those they employ. Now to compel these men, who are in a groove with which they are satisfied and which pays them, to mark all their productions with their own name and address, would be to destroy their market for them. Common sense as well as trade interest, is so strongly against such a regulation that I do not think it will ever be enacted. If it is, a number of small manufacturers would certainly be annihilated and no one benefitted. Full justice may be done all round by leaving the marking of goods made at home optional. If a small manufacturer can make goods that will sell and gain credit for the large buyer for whom he makes them, it is certain that the same goods would in time gain credit for the real maker. But it is waiting for this time that so often ruins a small man. "While the grass is growing the horse is starving." It is the temporary advantage of the assistance afforded by the ready money of the large buyer which has established a custom fraught with disadvantages as well. The man who can take the raw materials and by the skill of his own hands can produce a finished article and take the full responsibility for its production, is undoubtedly entitled to all the credit for its production. There does not appear to me any good reason why this man, who is a real manufacturer, should give his brain-work, the skill of his hands, and the trade they create, to another, by striking a merchant's name on the goods instead of his own. There is only the often very fallacious reason of "immediate advantage," and this is far too frequently purchased at the expense of future benefit. The practice is, that a factor agrees to sell the small makers' production on the condition that the latter agrees to let the former appear to the consumer as the actual manufacturer of the goods. I should like this obnoxious custom removed and to see every such bona fide maker getting the full credit for, and also the proper benefit from, his productions. But I do not think that the attempt to bring these results about by legal means is a wise one. I do not like middle-men—indeed I may go further and say I dislike them greatly, and I think something should be done to liberate skilled workers from their power. But to prevent the "man with money" from co-operating with the "man with brains" to the advantage of both (even if the greater advantage is sometimes on the money side), would very frequently prevent the ability of the brain-worker even being utilized. This would be a loss to the man and to the State. It will be seen that there are "two sides to this shield," each presenting a very different view. Both sides require careful examination.

The bill proposed by Mr. Broadhurst takes cognizance of one side only. One effect of his bill, if it becomes law, will be that small manufacturers will be placed by law in the same privileged position as the most successful firms in the matter of marking their goods. The small maker will enjoy all the credit that is due to him as the manufacturer of his production. Another effect of the bill will be that the little maker will have to bear the expense and responsibility of placing his production in the proper market for them. This subject is engaging much attention here, but I fear I have enlarged upon it too much for your readers.

There are several other topics that deserve mention, but I have "filled the bill," as you say.

The Hall-marking of particular gold and silver articles is a very vexed question. It is too large a one for me to enter upon.

Another topic of much interest just now is the abolition of the duties on gold and silver plate. There has been a strong objection to this measure, and even those who are disposed to approve of it now are very justly dissatisfied with the absence of any provision for allowing drawback on gold plate now in stock, although £120,000 has been provided by the Chancellor of the Exchequer for the drawback on silver plate.

I will refer to this again.

I have just returned from the Edinburgh Exhibition. There are not very many exhibits that pertain to our industries, and of these I will make brief mention in my next. VIGILANT.

—W. F. Grassler, an ex-jeweler of Williamsport, Pa., has invented an automatic electric railroad signal which, it is claimed, will absolutely prevent collision. It is called the Automatic Electric Signal, and has been patented in this and European countries. Railroad officials who have examined it speak of it in the highest terms, and steps have already been taken to introduce it extensively.

PARIS GOSSIP.

[From Our Special Correspondent.]

FASHIONABLE JEWELERS WILL NOT BE REPRESENTED AT THE FORTHCOMING PARIS EXHIBITION IN LONDON.—APPLICATION OF ELECTRIC JEWELRY TO THEATRICAL DEVICES.—WAS BENVENUTO CELLINI A GOLDSMITH?—A BATH OF MASSIVE SILVER.

PARIS, FRANCE, May 10, 1890.

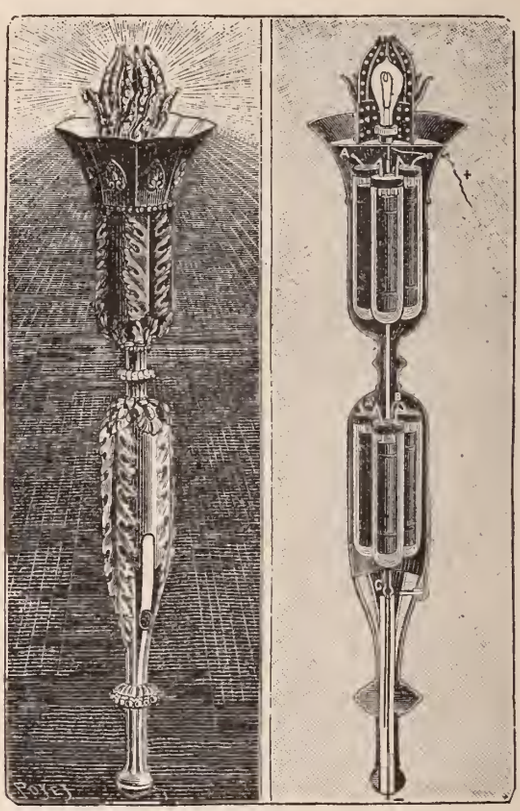
I feel that I ought to say a few words about the Parisian jewelers who are going to participate at the French Exhibition in London. With the exception of Gustave Sandoz, who is the President of Group VIII., I notice, in the jewelry line, no prominent name on the list of exhibitors. This may be variously accounted for. First, London being only a few hours journey from Paris, our fashionable jewelers know that the English customers they may have, and who all belong to the wealthy classes, often visit the French capital, consequently making it purposeless for them from a commercial point of view, to have a share in the present undertaking; Second, they are convinced that all English people likely to purchase their style of articles, visited the Paris Exposition last year, and the jewelers having had no time to make very startling novelties, they think it useless to send to Earl's Court the very same pieces of which their Champ de Mars' displays consisted. There is still another cause I believe for this unanimous desertion of the *gros bonnets* of our trade. M. Décle, a rather pushing man, president of a new society of manufacturing jewelers, from the first took a lively interest in the question of the French Exhibition to be held in London, and soon obtained the presidency of Class 1. I regret to state that this energetic (some will say fidgety) gentleman is greatly disliked by the aristocracy of our Chambre Syndicale, which he left hurriedly, some time ago, after many vain attempts to upset several sacro sancto regulations ofthat highly conservative body. It therefore seems evident that the prominent jewelers who might, otherwise, have consented to join the enterprise, have been deterred from doing so by the presence, at the top of the list, of M. Décle's name. On the other hand, numerous minor houses of the quartier *du Temple*, seeing that the fashionable jewelers did not wantt to stir, thought that there might be a chance for them to attract attention; hence the very great success of the undertaking so far as our second rate firms are concerned. Up to this day 95 exhibitors have enlisted in class No. 1, and a few more are expected to join. It is probable that everything will not be ready and in place before the middle of June, although all partici pants are very eager fort he opening. Without being able to form an exact idea of the probable effect, I can say this: a great variety of middle class French jewelry will be exhibited, and will prove, no doubt, very interesting to English people who want to know how we manage the cheap lines. A few glittering displays will break, here and there, the monotony of the ensemble; but I do not think that on the whole, the section of jewelry at the Exhibition is likely to give an exact idea of the best Paris fashions.

INGENIOUS APPLICATION OF ELECTRIC JEWELRY.

A new application of electric jewelry has been made, at the Opera, in Ascanio, the last work of Saint-Saens. It is the latest contrivance of M. Trouvé, who, several years ago, made no end of startling inventions in that line. Everybody has heard of those dazzling lockets, sprays of flowers, hair pins, diadems, cane tops, etc, whose source of light resided in a tiny accumulator hidden either in the folds of a ballet girl's skirt or in a waistcoat pocket. In the present case the effect is obtained by a still more direct means. In a mythological ballet in the opera, Mlle. Torri, who personifies Phoebus Apollo as seen in the illustration holds in her hand an elegantly shaped torch, which is really an incandescent lamp whose light shines through a gathering of vari-colored stones. Six Plante accumulators all provided with their maximum of power, are hidden in the body of the torch, three of them being placed in the top part, and three in bottom part. Each accumulator weighs seventy grammes, which gives a total of 420 grammes for the whole battery, capable of supplying light during about twenty minutes. The point of contact *C* is in the handle; consequently, the girl who holds the torch so as to have her thumb placed on that point, needs only to give a very slight pressure to light up the lamp, and when she raises the thumb, it goes out.



New application of Electric Jewelry.
Torch used in the opera of "Ascanio."



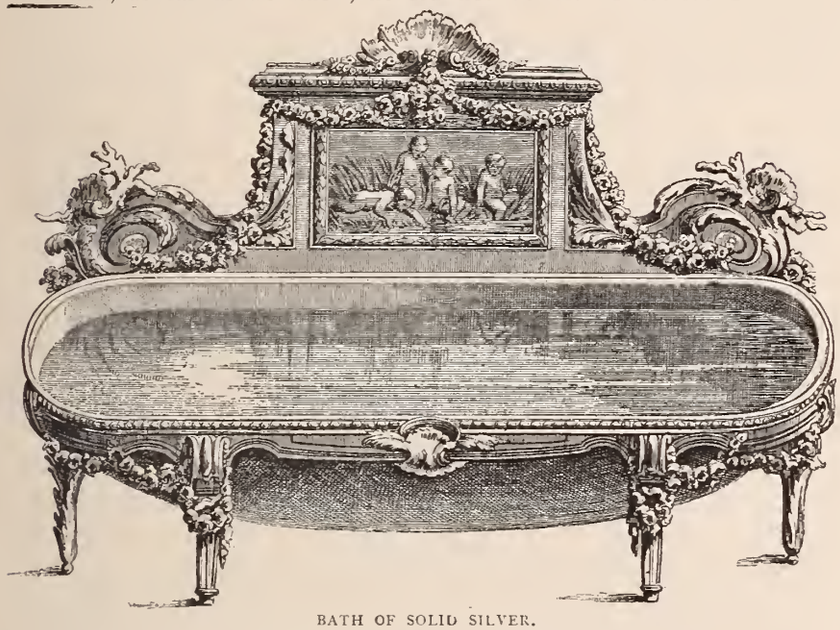
Exterior and Interior views of the Torch.

Ascanio was Benvenuto Cellini's pupil, and the new opera is founded on an episode in the life of that great artist. In one of the scenes, Cellini presents Francis I. of France with a statue of Jupiter, in gilt silver repoussé, the only one he ever executed out of the twelve which he had undertaken to make to accompany the grand surtout. It was in repoussé, and not cast as a scene in the opera would lead us to believe. All details concerning it may be found in the *Trattati sopra l' Oreficeria e la Scultura*, written by the powerful metal-worker.

WAS CELLINI A GOLDSMITH?

I am aware that in speaking of the sublime Benvenuto Cellini,

who is considered the demi-god of goldsmithing, I ought to be extremely cautious. Yet I humbly think that if we coolly examine any of his works which have been preserved, and picture to ourselves those described in his memoirs, we must admire him above all as a sculptor and chaser. He was, properly speaking, neither a gold nor silversmith, nor a jeweler; but a great artist, who used gold and silver as well as iron and bronze, besides employing precious stones and enamel, when it suited his fancy. He made in the gold and silver line some wonderful pieces, such as the celebrated salt-cellar, and several ewers and cups; but his chief object was to introduce in them all kinds of figures, and to that end he entirely sacrificed fitness. I do not mean to say that he was unable to make for table use, a piece in gold or silver deriving all its beauty from elegant outlines and designed in obedience to the laws of fitness. I simply state that, as far as we know, he did not do so. Therefore I



BATH OF SOLID SILVER.

consider that if, according to the advice of some connoisseurs, our modern silversmiths were all to tread in the great Cellini's path, we soon should have more than a sufficiency of salt-cellars with good sized figures at home in them, and of ewers bristling with ornaments, and exhibiting naiads and tritons upholding each other in a peculiar manner so as to form a handle. This style is still prevalent for prize cups, and splendid specimens of it have been made in America, as well as in Europe; but it could not very well, now-a-days, be introduced into articles for daily use. All the pieces of a table-set must above all, be made to answer their purpose. They may be embellished with ornaments and even figures of a proportionate size in relief, but the shape which indicates their special utility ought never to be hidden or altered by these accessories.

If we consider Benvenuto's style in jewelry, we are at once convinced that his works of art in that line, although worthy of our greatest admiration, cannot at all answer our present requirements. Jewels of an architectural design, with columns and statuettes, may be very interesting to look at in a museum, especially if they are of faultless workmanship, but they would seem to us out of place as articles of personal adornment. We must make flowers, birds, insects and ornaments of a light character, well calculated to enhance the beauty or refined appearance of the wearer, and thoroughly in keeping with all his or her surroundings. The jewel which we see on a lady, be it a brooch, a necklace, a headpiece, or the like, must look as though it had been made purposely to occupy a specified place on that person.

BATH OF MASSIVE SILVER.

A prominent silversmith is making a bath in massive silver for a lady who, besides a large fortune, possesses a refined taste. As shown in our illustration, this bath, reproduced from a drawing by De Lafosse, will be adorned in a style of transition, between the Louis Quinze and the Louis Seize periods. The shape is very graceful, and all the details—shells, garlands, and children playing by the water, with reeds at the back of the scene—will be beautifully chased. Now let us imagine how a staunch Cellinist would have it made. The body of the bath would be embossed with raging waves, parted here and there by nereids blowing out of sea-shells; tritons and naiads would cling to the brim on each side, in playful attitudes; and, at the back, as a central piece, the goddess of the sea, Amphitrite, would appear, standing on a large shell, with her beautiful rippling hair partly veiling her elegant figure. A great artist metal worker might, no doubt, make something handsome with such a design; but who can picture it as a comfortable bath?

JASEUR.

The Curative Quality in Amber Beads.

AMBER beads have always been popularly believed to possess curative properties, and many instances have been cited from time to time, in which beads worn in strings about the neck have cured or prevented certain diseases. The belief is usually regarded as a superstition, but according to Dr. St. Clair of Brooklyn, N. Y., there is in it more fact than fancy. He writes in the *Medical Summary*: "That mild currents of electricity are good for the throat and its own peculiar diseases is clearly shown by the string of amber beads. It is a fact that in a string of beads there is a current of static or frictional electricity constantly passing that will be shown by the milliampere meter. Amber was the electron of the Greeks and is truly electric. My daughter, when a child, was constantly troubled with false croup. I tried every known method of relief, and at last placed a string of large amber beads around her neck. From that day, she had no trouble for at least three years, till thinking she had out-grown the trouble, they were left off, and inside of two weeks she had the croup as bad as ever. The beads were again worn, and she has never had a return of the distressing disease since. I know of many cases in my own practice, and others in the hands of brother practitioners, that amber worn around the neck proved of great benefit. Dealers tell me they always make large quantities of amber beads, to suit the pockets of all, knowing the doctors will order some one to buy them for throat troubles, and that they sell thousands of strings."

Electric Welding.

A board of naval officers recently was ordered by the Secretary of the Navy to convene at Boston for the purpose of reporting upon the advisability of generally adopting the Thomson electric welding process, with the view to using the machines of this company in the various navy yards and on board the government cruisers, etc This board met and after several days' careful investigation made a unanimous report recommending the use of the machines by the navy in its various departments. In this report they state that the Thomson welding process can be found of great utility to the naval service, both on shore and afloat, for the following reasons: It can be used—

(*a*) In welding breaks in rods without altering them in either length or shape.

(*b*) For welding tubes.

(*c*) For welding angles and shapes of intricate form.

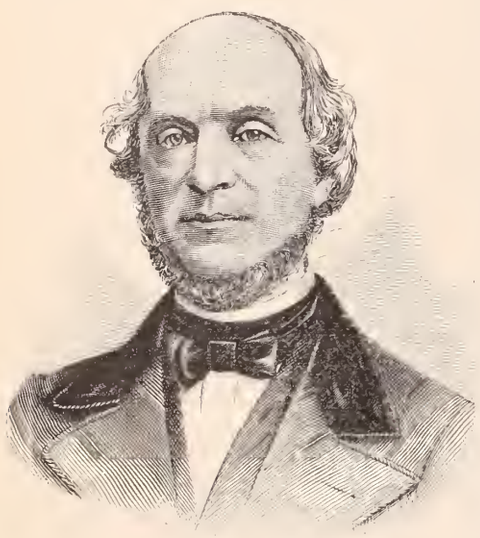
(*d*) For welding copper, brass, cast iron or other metals.

(*e*) For heating metals for forging, tempering and upsetting.

(*f*) For welding wire cables.

Jules Jurgensen.

THERE is no nation which can more justly look with pride upon its commercial thrift and energy than our rivals in the horological science, the Swiss. The history of horology in Switzerland is as thickly studded with names of men who have earned a deathless renown, as the barren surface of the country is covered with frowning, snow-capped mountains:—Jacob Brandt, Jacques Henri Vaucher, Jonas Courvoisier Clement, Mathey Claudet, Jean Jacques Jeanneret-Gris, Jean Frederic Leschot, Ferdinand Berthoud, Abram Louis Breguet, Francois Ducommun, David Henri Grandjean, Fritz Courvoisier and others familiar to every disciple of he craft, no matter on what part of the earth he may be seeking a livelihood. To these men is due the principal credit of having developed the fifteenth century watch, clumsy in construction and irregular in performance to the fine pocket chronometer of to-day, delicate and faultless in appearance and almost perfect in time-keeping. But the historian recording the progress of horology would be open to the charge of gross ignorance or injustice were he to omit the claims of Denmark to a share of the honors in the development of the science. These claims are based chiefly upon the achievements of that remarkable family of horologists, the Jurgensens, who for a century and a half have made watches at Copenhagen.



JULES JURGENSEN.

In this long line of artist-mechanics, the figure of Jules Jurgensen stands out in striking prominence. He was the son of Urbane Jurgensen, who, during the latter part of the last century, made chronometers at Copenhagen, and who inherited a watchmaking business established by his ancestor in 1745. In the beginning of this century, Urbane Jurgensen, with the object of extendinghis knowledge of horology, moved to Locle, Switzerland, where he became a prominent personage in horological circles, participating in a successful movement to suppress abuses owing to the lack of efficient patent laws, and perfecting many improvements in tools and methods of construction.

Jules Jurgensen, the maker of the world-renowned Jurgensen watch, was born at Locle on July 27, 1808. A year or two later Urbane with his family returned to Copenhagen where he remained until his death. As a young man Jules worked at the construction of chronometers under the eye of his father, his spare time being devoted to the study of physics, mechanics and astronomy. At the age of 27 years he returned to Switzerland; he afterwards visited Paris and London, where he improved his knowledge in the foregoing sciences. In 1834 he established at Locle a branch house of his father's firm, and devoted his attention principally to the construction of pocket chronometers, employing the various improvements in watch mechanism that he had conceived during his studies, the result being that marvel of excellence as a timepiece, the Jurgensen watch. The calibers used in these watches cannot be improved upon, while the escapements are eminently suitable for precise timing.

It may well be said of Jules Jurgensen that he contributed in a large degree toward the artistic development of horology in Switzerland. He designed more than 30 calibers, invented a thermometer which was warmly approved by the Academy of Sciences, draughted sketches of seconds and half-seconds, and constructed several astronomical timepieces after his father's plans, introducing into them several adjuncts of his own invention.

He passed the last ten years of his life at Geneva, and died on December 17, 1877. His business descended to his son, Jules F. U. Jurgensen, who worthily maintains the high reputation of the name of Jurgensen.

Method of Cleaning Pearls.

THE susceptibility of pearls, even of the purest quality, to become yellow and smutty in color by absorbing perspiration from continued wearing in the hair, around the neck, on the arms etc., or through exposure or age is well-known, and though the major portion of our readers are familiar with some method by which pearls so affected may have their original brilliant color restored, the following receipt will prove a useful addition to the workshop knowledge of many.

Boil the pearls for about fifteen minutes in fresh cow's milk, in which soap has been dissolved; then take them out, rinse them in clean water and dry with a clean white cloth. Inspect them to see if the desired results have been obtained; if not, repeat the method several times. If they still have not been improved, try the following: Have a neighboring baker make for you a small loaf of bread, into which before the loaf is baked lay the pearls, either strung upon a silk thread, or closely wrapped in a piece of gauze; then let the bread be baked pretty thoroughly—not to brown however. When the loaf is withdrawn from the oven, let it cool, then break it and take out the pearls, which will generally be found satisfactory and handsomely white. But it may happen that this process also does not avail, and the pearls are still yellow; this is a sure sign that the dirt has become old and has deeply penetrated into the pearls, or else that their green and blue color is owing to the circumstance of their having been strung upon silver-plated copper wire. Forcible agents now become necessary.

Take a teacupful of well-heated wine vinegar, and suspend in it the pearls strung upon a silk thread or wrapped in a piece of gauze for a few minutes. Then remove and rinse well in clean water, and repeat the operation until they have become white and the green spots have disappeared. This method will never fail, except when the pearls are naturally yellow or colored, against which defect of course, there is no remedy. Sulphuric acid diluted with an equal quantity of water may be used instead of the wine vinegar.

The causes of these remedies are briefly as follows: The boiling of the pearls in milk and soap simply dissolves the exterior coating of dirt while the baking in bread absorbs it by the steam. These two methods are perfectly innocuous and may be employed any number of times without ever injuring the pearls. If, however, the last forcible means has to be used, caution is necessary, as the acid of the vinegar, attacks them and dissolves a little of their exterior coating, and would dissolve them altogether, if they were not removed in time. Caution is still more necessary when sulphuric acid is used. Since, however, the dissolving occurs very slowly, there is no danger of ruining the pearls if any degree of care is exercised, since they are composed of thin laminæ, and it is plain by exposing them in the vinegar, only the outer pellicle will be dissolved without in the least injuring the water of the others, and with it also the dirt is removed.

At this place, we would like to append an observation to those jewelers who are principally engaged with stringing and setting pearls. As stated above the blue and green colors originate from the silver-plated copper wire on which the pearls have been strung. These wires being of copper, and the silver soon rubbing off, perspiration or other humidity will dissolve a little of the metal. This solution is verdigris and penetrates into the pearls imparting to them that disagreeable color to be seen in many, especially the older articles, and reducing their value materially. Pearls should always be strung on fine silver wire; they will then experience no alteration whatever. The additional cost of the silver is but trifling.

Fashions in Jewelry

A Lady's Rambles Among the Jewelers.

The fleur-de-lis is plainly very popular as an ornamental device. It is found in jewelry of every description, stamped and in relief on silverware, and particularly on the multiplicity of small objects that claim so large a share of attention. Its introduction is doubtless due to the French styles that prevail in interior decoration, and its graceful well balanced lines are well able to hold their own place, as far as delight to the eye is concerned.

*** *** ***

The shell, floating ribbons and bows get their prominence in the same manner, as do also the light garlands and festoons so gracefully introduced in neck ornaments and hairpins.

*** *** ***

There is a slight modification in the bows that are used as brooches The latest designs have two long loops and two very short loops, a form of bow that has proven very effective in millinery. These bows are made of diamonds with the slenderest settings of gold showing.

*** *** ***

Slenderness of design is another feature that is increasing rather than waning. Lace pins are scarcely more than glittering lines accentuated by a single fine stone or several stones grouped. There perhaps could be no better way of showing the beauty of fine stones.

*** *** ***

Bracelets follow the same fashion and their lack of massiveness is made up by the number worn. Seven bracelets were counted on the wrist of one woman, while her other wrist exhibited three. These are grouped as silver, gold, or gems, that is to say these varieties are not combined on the same arm.

*** *** ***

Gold and silver bracelets are being made in the same patterns. Gold is often combined with platinum in bracelets as in jewelry of all sorts. In bracelets the metals are separately twisted, the two together still making a slender armlet.

*** *** ***

The slenderest chains of fine yellow gold are used as necklaces, the ornament being some unique pendant often a large semi-precious stone surrounded by diamonds. Such a necklace sets off wonderfully a fine neck ; a less attractive feature needs a wider circlet.

*** *** ***

In other necklaces fine chains are used in clusters as festoons and at the point of intersection, jewels hang pendant.

*** *** ***

A necklace for a debutante is made of pearls as large as a pea separated by gold bands dotted with spots of turquoise blue enamel. The effect is that of a circlet of tiny turquoise beads.

*** *** ***

Another graceful necklace for a young person is made of a succession of tiny wild roses scarcely larger than forget-me-nots, but exquisite in workmanship. In the center of each sparkles a diamond in the midst of minute gold stamens.

On the other hand there is a tendency to barbaric designs and a lavish use of colored gems such as we see in Russian and Oriental jewelry. A brooch is made of square yellow topazes sunk in lusterless gold of the same tint, the dead finish of the metal and the polish of the stone contrasting to give the combination life and sparkle.

*** *** ***

Some of the necklaces that may be described as woven tape, glittering with colored gems convey the same sense of Eastern luxuriance. There are also brooches in gold and gems that copy odd tropical floral forms. But these must not be confounded with those marvelous imitations of orchids which have recently excited so much attention.

*** *** ***

A curious pendant or brooch is a crab, the body of which is made of two false pearls while its other parts are worked out in diamonds and silver.

*** *** ***

Watches are now heart-shaped. Such a trifle has a kitten peeping out of a basket, in colored enamels, surrounded by diamonds.

*** *** ***

In watches nothing surpasses those of round shape with backs of rock crystal brilliantly cut and set amid diamonds. It is difficult to say which has the most brilliancy the crystal or the diamonds.

*** *** ***

An eagle and crescent in diamonds are rather an unusual combination for an ornament.

*** *** ***

In a queen chain, a substitute for the ball is a gold basket filled with forget-me-nots in enamel.

*** *** ***

The workmanship in gold is a pleasure to the eye as it is seen in some jewelry. Such a piece was a gold pansy. The edges of the petals only were ornamented, but with a delicacy and perfection that is eloquent of the high point we have reached in the goldsmiths' art.

*** *** ***

Plain gold bracelets about three quarters of an inch wide have for their only ornament a tiny hook and staple slightly in relief and oxydized.

*** *** ***

Link sleeve buttons are important articles of jewelry. The smaller forms have double links, while the larger have single ones. The smaller and double links, however prevail. The button linked to a bar seems to be the newer form, but the double buttons have received more of the jewelers' skill. An odd fancy and one not very attractive, consisted of a painfully accurate copy of a four-hole pearl button.

*** *** ***

Celtic interlacings of gold and platinum have lost no favor as sleeve buttons They seem to be particularly adapted to men's wear.

*** *** ***

Beautiful sleeve buttons are made of oval moonstones with imbedded diamonds.

*** *** ***

The large curving buckles worn with costumes are brought out in gold. Some are enameled with Scotch plaid colors.

Double hearts of cabochon rubies and sapphires set in gold are imbedded in repoussé gold work as brooches.

*** *** ***

A four-leaf clover form outlined in double rows of pearls and enclosing trefoils of diamonds is a pretty design.

*** *** ***

Screw earrings consisting of diamond swallows holding pearls in their bills are pretty and becoming.

*** *** **

A queen chain has at its end a basket of eggs, the latter being simulated by pearls. Small repoussé vinaigrettes often containing large sized gems are also used to terminate these chains.

*** *** ***

Chicker-board designs are at present popular. A pair of large, square sleeve buttons have the alternate squares of diamonds and black enamel. A bracelet is made up of thin, square plaques of dead gold. These are varied by introducing checker squares in metallic colors.

*** *** ***

A pretty, girlish, daisy bracelet is composed of overlapping flowers in white enamel, with a larger daisy as a clasp.

*** *** ***

An onyx boot with nails of diamonds is intended for a scarf pin.

*** *** ***

The taste for semi-precious stones is attributed to their accessibility. The becomingness of colored stones makes them desirable, and very pretty necklaces come within the reach of many people who could never afford diamonds, rubies, sapphires, or emeralds.

Novelties in Silver.

Almost everything we use, if we are at all luxuriously inclined, is made of silver. Once silver utensils were the exception, but now, if not common, they are by no means unusual.

*** *** ***

Imitations of old Gothic and Renaissance coffers are made for stamps. These are of perforated silver, about five inches long, and correspondingly proportioned. They have four compartments for stamps, the bottoms being inclined so that the stamps can be easily extracted and are polished until they are like glass.

*** *** ***

Silver night tapers are balanced on standards. Beneath are long cores of red and yellow wax, which feed the receptacle. A small extinguisher forms a part of the article.

*** *** ***

Pen and pocket knives of silver are lacquered. The latter are made to contain everything from a corkscrew to a glove buttoner. In one, twenty different implements of finest steel were counted. If Robinson Crusoe had been cast away with one of these in his pocket, he would have been at once superior to his circumstances.

*** *** ***

Eye glass cases of silver have small raised fleur-de lis on an oxidized surface.

Nursery watches are set in silver standards horizontally, like mariners' compasses.

*** *** ***

Scent bottles of glass are square or oblong and covered with perforated silver on which certain parts of the ornament are gilt. The combination is pretty and the shape interesting.

*** *** ***

A vinaigrette for a chatelaine is a silver fish. A portemonnaie is a scallop shell. Vinaigrettes also fashionable, are shaped like the tear bottles of the ancients.

*** *** ***

Everything pertaining to manicure outfits receives attention. The various implements are often bought singly and used on a manicure tray. The nail files have become fairly works of art.

*** *** ***

Embroidery scissors are made with flat handles of silver that expand into wide and delicate interlacings. These are kept in beautiful leather cases.

*** *** ***

French influence is seen in the genre sketches, drawn or brought out in niello work, on match, cigarette and cigar cases. They are but little more than an outline, but full of spirit and in admirable humor.

*** *** ***

Betting books have silver backs with a horse and jockey in full run.

*** *** ***

Tiny match boxes for fusees have sporting scenes in enamel on the back.

*** *** ***

Young girls at present have a penchant for giving one another small silver trays. These are very convenient for the toilet, to hold scissors, pins, and the numberless trifles that are wanted in a hurry.

*** *** ***

The pointed girdles now worn with costumes have been provided in silver. These are not flexible like the ceinture, but are made solid so that they keep their places without trouble.

*** *** ***

Lorgnons of all descriptions are now found in silver, and for common use are much more serviceable than those of delicate shell.

*** *** ***

Silver fans as delicate as lace work are pretty toys to be carried with summer costumes.

*** *** ***

Hanging pincushions are made of perforated silver in cylindrical forms over red and green plushes. The cushions project at the end. Sometimes these are of hour-glass shapes.

*** *** ***

Silver key chains are the latest novelty.

MOURNING pins are made in dead enamel on silver, with a line of the metal showing. Floral forms, pre-eminently the pansy, are used.

*** *** ***

SIDE-COMBS with oxidized ornamental edges are used in mourning.

*** *** ***

CORK-SCREWS made of handsome woods, cut in spirals, with the ends mounted in silver, are both pretty and convenient.

*** *** ***

LIQUOR flasks covered with a net-work of flowers and vines stained with metallic colors are objects of beauty.

*** *** ***

THE CHAFING dish is now an object of attention. Every housewife likes to have a couple of these for rabbits and impromptu suppers.

Bric-a-Brac, Art Glass and Pottery.

SOME of the pieces of Gallé glass which enjoyed the distinction of being placed in the Salon d' Honneur at the Paris Exposition have been brought to this country. Each piece is modelled and engraved by Gallé, is numbered and in every way is unlike its fellows.

*** *** ***

APPARENTLY the accidents in the manufacture of the glass suggest the treatment. For example a series of oblong bubbles in a streak of brownish glass suggests fish swimming in the ocean. Accordingly when held up to the light water-lillies and the slender figure of a sea nymph fishing are seen in engraved forms. The colors are strange and beautiful and the whole work so individual that we can readily understand the furore both the man and his creations have excited in Paris.

*** *** ***

THE newly imported fans are worthy examination. One largely of point-lace has a center and upper border of gauze, on which doves are flying with outstretched wings and maidens are endeavoring to catch them with nets. The sticks are cut only on one side and are enriched with gold.

*** *** ***

EWERS and bowls of onyx mounted in silver gilt are among the novelties.

*** *** ***

THE parasols of the season are truly marvellous. A white silk parasol is ornamented with butterflies of black Chantilly lace as if they had just poised for the moment. Others decorated with pansies and violets, white lilacs and jonquils, are the finest of French artificial flowers. When carried they look as if the owner by mistake had walked out with the shade of her piano lamp.

*** *** ***

MEN'S shaving cases are lined with white silk and enclose the implements, consisting of the razors of smoked ivory. They seem thus mounted to be intended as bridal presents.

*** *** ***

A LARGE lamp of yellow flashed with brown, a new combination of tints, has a shade of yellow silk covered by a larger shade of brown embroidered gauze. This repetition of tints is very effective.

*** *** ***

CHINA candlesticks simulating columns of different orders of architecture in white and gold are in vogue.

PERFORATED borders are introduced in even the commonest varieties of porcelain, and always lend an air of elegance to the wares.

*** *** ***

YELLOW toilet services, and ribbed and garlanded white and gold wares reflect the prevailing taste in interior.

*** *** ***

AS the season opens jardinieres and vases for lawn and piazza assume great prominence. Flashed red and gold open-mouthed vases are mounted on low pedestals of the same ware. Large blue vases of the same shape decorated in bold Begonia leaf designs are set on cross sticks of bamboo Large Renaissance vases of mottled greens are supported on chimeras and grotesques of the same color. Tall, upright, broken-shaped vases of *gres de Flandres* which is the gray and blue stoneware that copies old Flemish work are of the latest introductions.

*** *** ***

DRESDEN china parasol handles go with the prevailing ladies style of dress.

*** *** ***

ONE of the prettiest things seen was in a private house; this was a hanging cabinet of ebony shelves on Dresden china pillars. The contents of the shelves were all of Dresden china, including a charming tete-a-tete service.

*** *** ***

TANKARD forms seem to be popular, perhaps because the loving cup is at present the fashion. A number of prizes for the coming contest of the Berkeley Athletic Club were noticed the other day, and all were tankard-shaped. ELSIE BEE.

Patents, Oct.—Dec., 1889.

The total number of patents, design patents and trademarks pertaining to the jewelry, watch and kindred trades granted during the last quarter of 1889, was approximately the same as that of the preceding three months. In all, 139 patent letters were issued, 110 for inventions, 23 for designs and 6 for trademarks. The following is a classified statement :

PATENTS.

Jewelry.	Watches, etc.	Clocks, etc.	Horology.
12	36	15	5

Optical	Tools and Attachments.	Processes.	Machinery	Miscellaneous.
13	5	8	10	6

DESIGNS.

Jewelry.	Silverware.	Optical.	Horological.
9	12	1	1

TRADE MARKS.

Jewelry.	Optical.	Horological.	Miscellaneous.
1	2	2	1

It will be noticed that optical manufactures still command considerable inquiry among inventors, and that the scope for improvement in the horological field is still apparently unlimited.

Lathes and Lathe Work.

BY THE MODEL WATCHMAKER.

WE HAVE in recent articles given the necessary instructions for producing practical epicycloidal curves for the teeth of wheels; it now remains for us to resume our discussion of the construction of the cutting engine for carrying out our theories. We propose next to describe a cutting engine simple in construction, and capable of producing its own cutters; also such cutters as are used in the ordinary rounding-up tool. Thinking that many young workmen themselves would like to make such a wheel-cutting attachment, and to construct a slide rest at the same time, I will just describe the method of making such a slide rest.

The combination when complete represents a perfect slide rest, a wheel-cutting engine capable of producing its own cutters; these cutters are able to cut any wheel or pinion used in watch-work, even a cylinder escape wheel. If such an attachment is not worthy an effort, I am unable to surmise what can excite a watchmaker's covetousness, especially when the whole can be obtained at a small outlay of money, and with much less labor than one would think would be necessary to effect such desirable results. Many workmen opine that a slide rest is very difficult to make, whereas, in fact, the operation is quite simple.

Before going further, let us state the necessary tools for making such a slide rest. A good-sized parallel jaw vise heads the list; this should weigh about 20 pounds, and have steel lined jaws from 3 to 3½ inches in length. Such a vise every working watchmaker should possess, and consequently it should not be considered as part of the expense in making a slide rest. The next extra tool is a plate glass slab about 8 inches square, ground with a roughened surface. Great care should be taken to select a plate perfectly flat; the best test for this is by the reflection of some object having a straight edge, such as the post of a door placed at some distance from the glass, the observer also stationing himself at some distance. A little practice will soon enable one to judge if the surface is perfectly flat.

The metal to be used in the manufacture of the slide rest is good grey cast iron. Care should be taken in getting up the patterns, so as to have no more filing and fitting to do than is absolutely necessary. The first piece to make is the bed plate; this should be made from a piece of cast iron 5½ inches long, ⅝ inch thick and 1½ inches wide. Add to the above measurements $\frac{1}{32}$ inch for "shrinkage" and for finishing. The pattern from which the casting is made should be carefully and exactly made to precise measurements. At Fig. 1 is shown a view of this piece as applied to the lathe and as if seen from the position of tail stock. The sizes given of the parts will apply to either the 1½ Whitcomb or Moseley lathes. This base or bed plate is attached to the lathe bed by a bolt *a* which forms a part of the attachment, and dispenses with the use of the hand tool rest slide. The bolt *a* is constantly attached to A, and when put in place the nut *d* is removed and replaced. The reason for this departure from the usual mode of construction will be explained further on. A circular channel or groove *b* runs lengthwise through the piece A; this groove is ½ inch wide and ¼ inch deep. An end view of this bed plate is seen at diagram A*, showing the relative width and depth of the groove *b*.

The castings for all the parts should be of the best material, which will aid much in the success of the undertaking. It is well to speak of the difference in castings. Two important features are essential in iron castings: first, true and smooth molds; second, soft iron which is free from hard spots, as such iron works freely and is rigid, and not liable to spring out of place while being worked. Very few foundries turn out really fine castings as they use both poor iron and bad sand. Superior castings can be obtained from North Bros., founders, corner 23d and Race streets, Philadelphia.

In finishing the bed plate A, we commence by wetting the surface of the casting with a mixture of sulphuric acid and water in the proportion of 1 part of acid to 4 parts of water; this is applied three or four times in twenty-four hours, when the sand scale will slough off, and the casting come out comparatively clean. We will next flatten the upper surface of A. The reader will notice there is a notch or recess in the ledge of A, as shown on *e e*, Diagram A*, which is used for holding the plate in the vise in finishing the upper surface of A and also serves to reduce the angular surface to be

FIG. 1

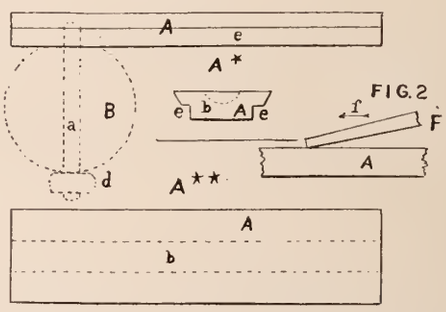


FIG. 2

fitted. We lay the slide A on the glass slab described above and ascertain how near to flatness it is; and then with a half-worn large flat file (say a 10-inch bastard cut) proceed to remove the scale and at the same time observe to do the most of the filing at the high points, so that when the scale is all removed the work is flat. This can be ascertained by smearing the surface of the glass slab with a very little red lead mixed with olive or lard oil. The fresh bright-filed iron will be blackened by contact with the glass and thus betray the points to be removed first by the file, and afterwards perfected by a scraper formed from an old worn-out 6-inch bench file, ground square at the end, the sides being smoothed also near the end. It is used by applying the squared end to the work and pushing it forward in the direction of the arrow *f*, Fig. 2. In this cut F represents the old file and A the bed plate. About the proper angle to apply the scraper is shown in the cut. The upper surface of A is filed and scraped until nearly the entire surface touches the slab of glass.

There is some skill required to use a glass slab properly, as, for instance, in applying the red lead and oil, the thinnest possible film should only be applied. I wish to impress on the workman, the importance of patience, and of learning to do his work carefully and well. After the face of A touches nearly all over on the glass slab, take some flour of emery and mix it with oil to the consistency of thin paint; then apply an even coat by using a rag employed almost as a wiper—in fact I might say *wipe* the glass with a greasy rag, the grease being thoroughly incorporated with the emery. It is desirable to have only the slightest coat of emery and oil on the glass. We now rub the face of the bed plate on the glass, renewing the thin greasy coating of emery every few minutes until the surface of the iron is dead flat. The iron is now washed and then rubbed with soft bread crumbs to remove all the emery from the surface. Upon applying the clean surfaces of the glass and bed plate together and rubbing them we can judge how well we have done our work. The groove *b* is finished by using a 10-inch rat-tail file, using a fair amount of care to keep it true. For smoothing out, use a cast round bar of lead, made by pouring melted lead into a paper tube. This lead bar is used by rubbing it back and forth in the groove with rather coarse emery and oil.

CLOCK DECORATION.

A BRIEF REVIEW OF THE ARTISTIC FEATURES OF CLOCKS FROM THEIR EARLIEST INTRODUCTION.

By Paul Tonnellier.

(*Commenced in the February Number*)

PART V.—*Conclusion.*

EIGHTEENTH CENTURY STYLES.

OUR fig. 26 reproduces a clock in gilt brass, which deserves to be considered a perfect model of the Louis XVI. style soberly treated. The size of it is 47 centimeters in height, and 28 in width; all the parts are so harmoniously arranged that those who are fond of symmetry must admire it. On the other hand, those who will look into the details may examine it as closely as they like and they will be obliged to acknowledge that the chasing is everywhere beautifully finished. The dial is in enamel, and, underneath it, is an opening covered with plate-glass and partly masked with festoons. The ornaments on the stand are in pierced work so as to give it a lighter appearance. This well preserved relic of the last century belongs to Madam Gabrielle Delessert.

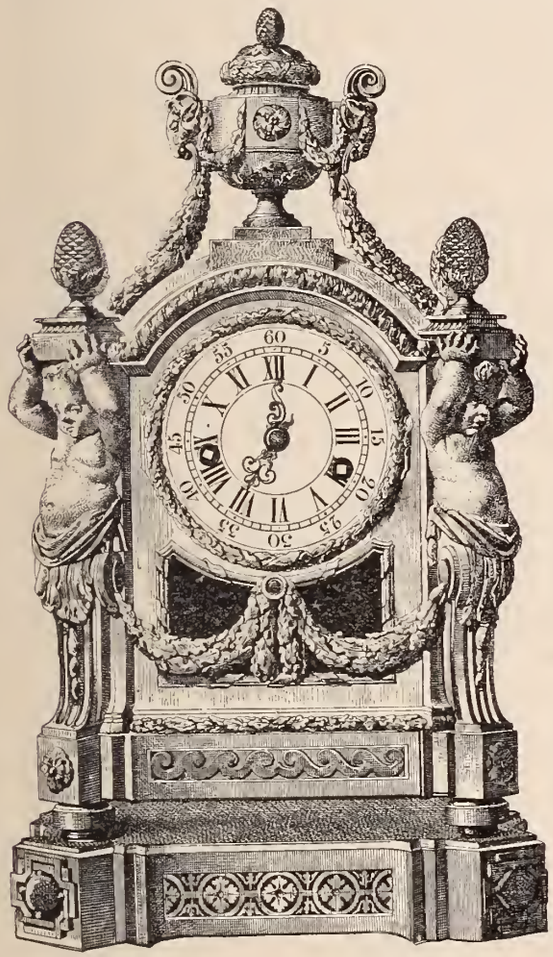


FIG. 26

The Hamilton collection contained several Louis XVI. clocks of various designs. One of them, whose pattern has been more or less skilfully copied by those who supply old curiosity shops, is thus described in the illustrated catalogue: A Louis XVI. clock by Kinable (with enameled dial) in lyre-shaped case of old Sèvres gros bleu porcelain, mounted with ormolu, with a mask of Apollo at the top; and adorned with wreaths and festoons of flowers and foliage, chased in high relief; the pendulum formed as a circle of fine old pastes—25 inches high.

A great many more clocks of this period might be described since, happily, elegant timepieces belonging to the second half of the eighteenth century are rather numerous in museums and collections; but, it would carry us too far from our programme, which is merely to place before your eyes a few varied specimens of each style. Yet I cannot resist reproducing (in fig. 27) a clock especially remarkable for its graceful originality. It has the shape of a fancy garden reservoir. The basement is in marble, and all the other parts consist of gilt brass, except the dial, in enamel, which moves around and brings the hour marks behind a fixed star made of Rhine stones. The weight of the pendulum is formed of a Phœbus' mask; and, at the back, two doves, beak to beak, stand on a cloud above an altar of Love. The whole height of that pretty piece (which belongs to M. Voret, at Nevers) is 41 centimeters.

We reproduce, in fig. 28, one of the most perfect examples of the Louis XVI. style. The harmonious divisions of the structure, as well as the delicate treatment of the most trivial details are so thoroughly remarkable that, whether we look from near or far, the pleasure it gives will be the same. It consists of white marble and gilt brass. A figure, emblematic of Music, stands on a truncated pillar, on the left side; and one who personifies geometry is on the other one. Cupids, trophies, garlands, and curling ornaments are all most daintily chased. The ensemble is at once stately and handsome. This timepiece is one of the chief attractions of the Royal palace, at Madrid.

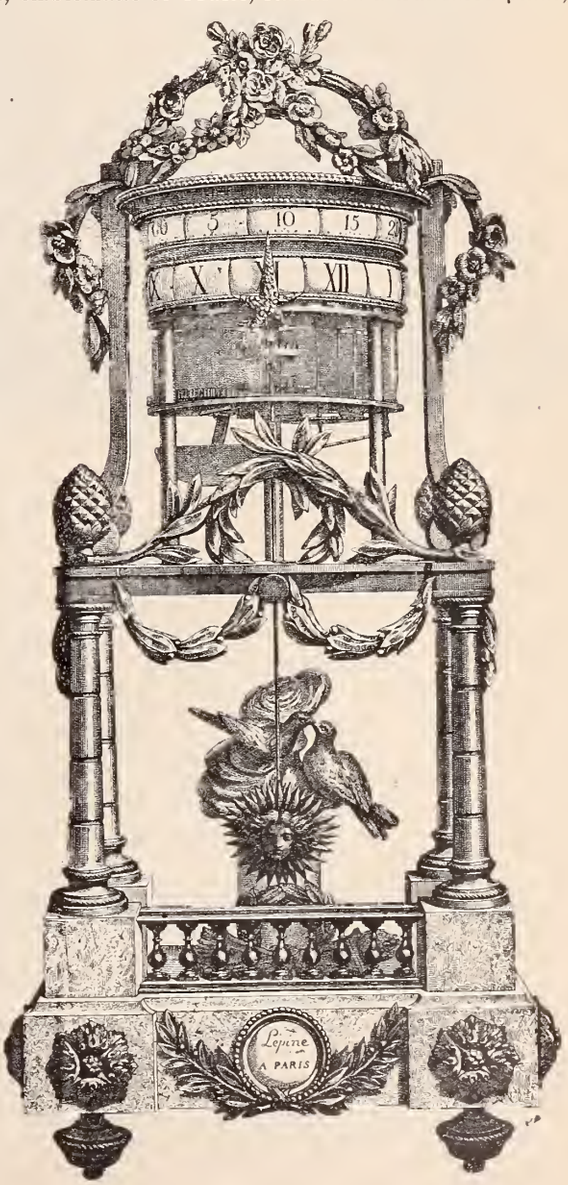


FIG. 27.

Some clocks of this period exhibit all kinds of mythological scenes. One of them, made in brass, by Saint-Germain, represents the abduction of Europa. Jupiter, in the shape of a fine bull, has on his back a large dial, surrounded with floral ornaments, on the top of which the daughter of Phœnix, as Homer calls her, sits in an attitude expressive of resignation. Two maidens evidently the companions of the unfortunate beauty, seem greatly distressed

by the sudden event. One of them, more brave than the other, attempts to stop the terrible pseudo-animal in his flight.

In 1778, Macé, a jeweler at the Ponto au Change, Paris, received no end of visitors, anxious to see a beautiful clock which he had in ormolu showing, beside the creation of man, a number of allegorical figures, intended to represent the Royal marriage. This extraordinary work was adorned with a great many pieces in massive silver exhibiting the arms of the French provinces. Granchez, the jeweler to Queen Marie Antoinette, sold no end of clocks called the Innocence, *la Pleureuse d'oiseaux*, Apollo and Daphne, and many other poetical groups.



FIG. 28.

It was towards that time that Falconet made his celebrated three graces, which at the L. Double sale (in 1881) were sold for 101,000 francs

MUSICAL CLOCKS.

I must also mention the musical clocks so numerous at the end of the eighteenth century. In 1776 the *Annonces, Affiches* and *Avis divers* of the 6th May, contained the following advertisement: On sale, rue Ste. Croix de la Bretonnerie, a clock with carillon playing twenty-eight tunes, etc. On the 26th of January, 1878, various papers published a special paragraph, running thus: "the person who offered 3,100 livres for a clock with carillon, and enriched with diamonds, is requested to call again." Most critics of the period strongly objected to the introduction of music in timepieces; and we must really acknowledge that if all the clocks in the same house played different tunes, at the very same moment, as must have been the case with well regulated works, it was absolutely unbearable. Queen Marie Antoinette possessed a clock-organ, half in brass, and half in Sèvres and Saxony porcelain, containing a whole band of dressed up monkeys, which, standing on brass steps, covered with flowers in pâte tendre, played every hour a wild Bacchanalian symphony. We can imagine the effect of such a concert on the mind of a person in deep sorrow. I felt obliged to give the above details, considering them necessary features in this brief and incomplete history of clock decoration and styles.

THE REVOLUTIONARY EPOCH.

At the very outset of the Revolution, a great change took place in the general appearance of timepieces. The *Journal de la Mode et du Gout* tells us that as early as the month of July, 1790, every true citizen boasted of having a clock or *pendule civique*, adorned with the emblems of liberty and showing the federalist altar of the Champ de Mars, supported by pillars of marble or gilt brass. A little later on, most clocks exhibited, instead of the (so-called) old-fashioned twelve hours of monarchy, the ten new republican ones, painted on the dial. A curious clock of that period preserved at the Musée Carnavalet, has three dials. The center one, which is the largest, bears the twelve hour marks, the bottom one indicates the decimal time, and the top one shows the day of the month. According to a decree emanating from the celebrated convention, the day had been divided into ten hours, instead of 24, and the hours into a hundred minutes of a hundred seconds each.

All these clocks were very far from elegant, and none of them would deserve to be reproduced in this serial. Artists of talent were not wanting, but their fancy was chilled by terrorism. They shuddered at the idea that an ornament, innocently placed here and there, might possibly betray them as criminal survivors of the king's party.

STYLES OF THE EMPIRE.

I must not omit to mention the style of the Empire, of which numerous specimens are preserved in all bourgeois families. I have seen a great many of them; and, although I must acknowledge that a certain variety has been displayed in the shapes of these clocks, yet I noticed that most of them exhibit in their outline a deplorable stiffness. The evident effort of the artist to make something perfectly symmetrical is often painfully visible; and some of these works seem to have been made from drawings of clever school boys.

Our fig. 29 shows a clock of the Empire style designed by Percier. I thought it deserved to be reproduced, not as a model worthy to be copied, but simply as a curiosity. People who are fond of lines, with very little besides, will derive pleasure from looking at it. The face of Apollo in glory as seen at the top of this rigid monument, has a beautiful expression of serene calmness in suffering. It is evident that the silent company of those two sphinxes, which turn their backs on him, does not please the god of harmony. The sober association of Egyptian with classical reminiscences (a result of Bonaparte's campaigns) makes of this clock a singular piece. It would be unjust to deny that some specimens of this period bear the marks of thorough artists; but as these always exhibit some Greek or Roman scenes, according to the dictates of

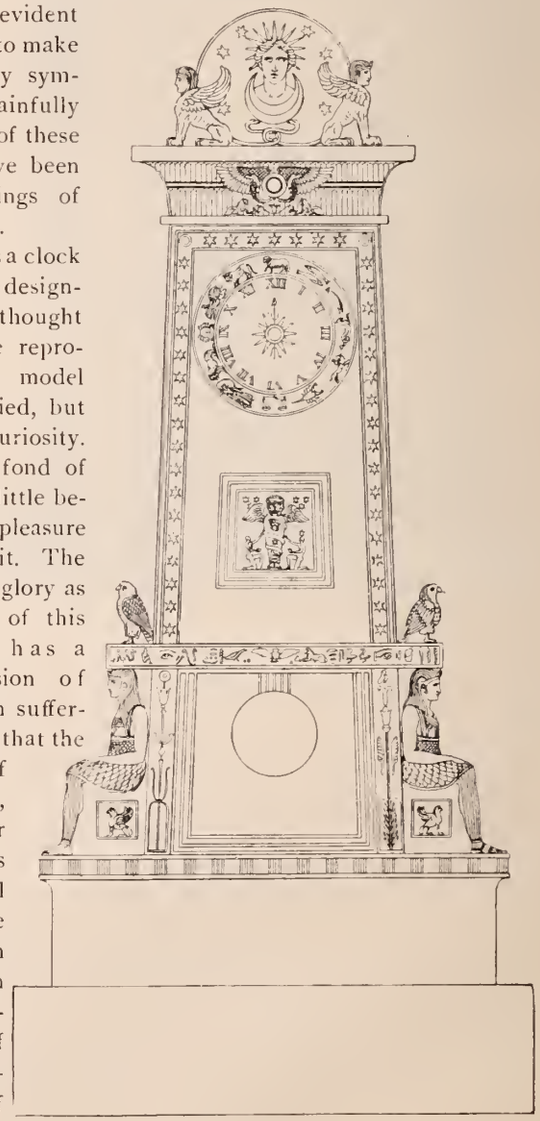


FIG. 29.

the painter David, it is hardly necessary to reproduce here any of these clocks. Open an ancient history, with illustrations, and if you come across the profile of a quadriga, you may easily imagine that the wheel showing is a dial with a pierced back-ground. Suppose, then that the handsome car, drawn by four beautiful horses full of life, rests on a low stand adorned with trophies of war in half relief, and fancy that the whole of it is thickly gilt with some burnished parts; this will represent very well the finest specimen of Empire clocks.

Although many remarkable timepieces have been produced during the last seventy-five years, no really new style has been created. Therefore I must consider my task, in the present essay, as having come to an end. I hope that the readers, who kindly accompanied me through my brief journey into the past, may derive some benefit from it. If such be the case, their thanks are largely due to THE CIRCULAR, whose handsome illustrations have done a great deal more towards the practical success of a work of this kind than could ever be realized by the most accurate descriptions.

Contact Arrangement.

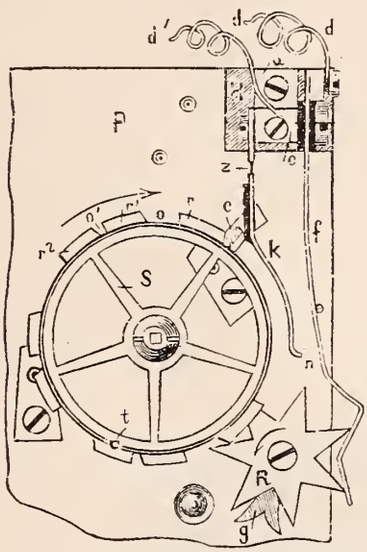
UNDER the caption, "The introduction of a contact arrangement to a regulator, in order to electrically effect the ringing of a bell at different stated times each day," the *Deutsche Uhrmacher Zeitung* contains the following illustration and description, furnished by the inventor.

A short time ago, says the author, Hermann Müller, a fellow watchmaker asked in the Question and Answer columns of an exchange where he could purchase a clock with contact arrangement, by which the ringing of a factory bell could be automatically performed at different hours of the day. I returned an answer that I had altered a clock to do this, and if the interrogator desired I would willingly give him the necessary explanations and illustrations. I have since then received a number of letters soliciting this favor.

I was ordered to construct for a factory a reliable clock with contact apparatus which should ring the bell at certain hours of the day, to wit: at 6, 8, 8.30 a. m., 12m., 1, 4, 4.30, and 7 p. m. These are the hours for the commencement and quitting of work, luncheon, etc. Besides this, the clock had to be furnished with an automatic stop arrangement so that the ringing would be suspended on Sundays, but commence again on Mondays.

I solved this task by altering an ordinary 14-day regulator with spring winding in such a manner that the striking work was no longer effective, but served as simple running work for establishing the contacts. For this, I used the count wheel, the division of which I altered so that the places which raise the rack arm, were changed into the periods at which the current was to be closed. I calculated the division of the count wheel as follows: The clock struck the full and half hours formerly, therefore 48 unlockings occur within the 24 hours, at which the striking work gives at least one stroke before the starting pin comes at repose. Since, now, the count wheel is divided into 78 full strokes and 12 half strokes, therefore, for 90 strokes for one revolution in 12 hours, while now, however it makes one revolution in 24 hours, 48 strokes are lost by the unlocking in this time. There remained consequently around the circumference of the count wheel still a part corresponding to the duration of 42 strokes, and which I could divide in the form of raisings, upon the eight places of contact, while I filed away entirely the other raises at the places for the empty unlockings. Upon six of the eight places of contact I could according to this, employ a length upon the circumference of the count wheel corresponding to 5 strokes, and for the other two one corresponding to 6 strokes, to which had still to be counted the first stroke necessary for the unlocking. I employ the expression "strokes," only because more easily understood, as in reality there are no longer any strokes, the hammer raising device having been taken out.

In the accompanying sketch, the two longer places of contact are at the place where the first and last daily ringing of the bell occurs.



The count wheel *S*, which revolves in the direction of the arrow, stands in such a position that at the next unlocking the rack-arm *e* is lifted by the raise *r* on the count wheel, and thereby establishes the contact for the first ringing at 6 o'clock in the morning, which continues until the rack arm has dropped behind the raise *r* into the space *o* of the count wheel. This space *o* is sufficiently long that the next succeeding three unlockings at 6.30, 7 and 7.30 take place without any effect—that is, the rack arm *e* is by the warning of the clock raised only very slightly, and falls at the drop of the unlocking at once back again into the space *o*, without establishing a contact, while the striking part comes again to repose after one revolution of the warning wheel.

Only at the unlocking taking place at 8 o'clock, the count wheel has advanced so far that the rack arm *e* is now lifted sufficiently high by the raise r^1 to again establish a contact, after which *e* drops into the space o^1 which is made so small that by the time of the next unlocking at 8:30 o'clock, the raise r^2 actuates upon the rack arm, and again causes a closing of the contact, and so forth. The very large space at the end of which the rack arm is seen in the illustration, is of such a length that after each other 21 empty unlockings without closures of current take place, corresponding to the 21 half-hourly unlockings which lie between the last ringing at 7 o'clock P. M., and the first ringing at the next morning at 6 o'clock. The circumference of the count wheel is thus divided with as great a precision as demanded by the required periods of the ringing.

The device for closing the current consists of two contact springs *f* and *k*, which are to the right and left screwed upon the high shoulder *c* of the bridge *a* and insulated by small ivory plates lying between. In the same manner, the bridge *a c* is insulated from the plate *P* and the contact spring *k* by an ivory or ebonite plate, lying underneath, at its place of contact with the rack arm *e*. The spring *f* stands in connection by the conduit *d* with the one pole and spring *k* by the conduit d^1 with the other pole of the battery, and the current is closed every time when the rack arm *e*, during the revolution of the count wheel *S* is liftied sufficiently high by one of the raises *r*, r^1, etc, that the contact spring, lying on *e* can lay itself with its curved end *n* against the spring *f*. In order to prevent as much as possible the pressure occasioned by the lateral bending of the contact spring *k* by the rack arm *e* being exerted upon the unlocking, a short piece of very elastic suspension spring has been inserted in the former. The closure of the current and the consequent bell-ringing lasts as long as the rack arm *e* is lifted by one of the raises *r*, r^1, r^2. If the several closures of the current, consequently the duration of the bell ringing should be too short, it is obvious that an appropriate apparatus effecting the ringing for a certain length of time, must be introduced.

The stopping of the contact arrangement during Sunday is effected in a very simple manner by a star *R* revolving around a pin. This star is pushed forward one tooth once per day between the hours of from 9 to 12 P. M., by means of a pin *t* in the count wheel, and retained in its position by the spring *f*. The star *R* now has 7 teeth, and between two of them, riveted on is a piece *g*, of a swallow-tail shape, which on every seventh day bends the spring *f*, so much

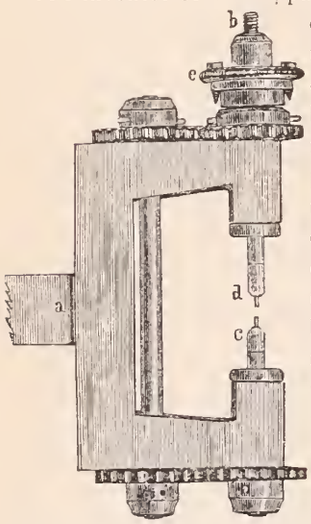
farther away from the end *n* of the contact spring *k*, that in spite of the revolution of the current wheel, effecting the lifting of the rack arm *c* the current cannot close, until in the night from Sunday to Monday the star *R* has again advanced by one tooth. The cut shows the position of the star *R* every Friday. Both the locking and unlocking are perfectly reliable.

I have, of course, taken out both the hammer and gong, since the clock has no longer a striking part; the running work alone is used for this contact arrangement.

Taking out a Broken Screw.

WATCHMAKERS know that it is a very disagreeable occurrence, when by putting in or taking out a screw the head breaks off, and it is necessary to get the stump out of its hole. Various contrivances are in use for accomplishing this irritating task, the greater number of which, however, do not answer the purpose.

The inventor of the apparatus shown in the accompanying cut claims that it will unfailingly perform the operation. Every part of the tool except the arbor and pins is made of brass. It has a projection *a*, by which it is fastened in the vise, the two end pieces of the cramp are drilled to receive two tight-fitting pins *c* and *d*, which are of well hardened steel. The extreme ends of these pins are roughened so as to retain their grip more securely. To keep them from revolving, the holes are furnished with a groove and the pins with a bead, and their fastening is similar to that of a chuck drill or screw driver.



When the tool is to be used for drawing out a stump, it is first fastened in the vise, with the end marked *b* up. The plate or bridge with the broken screw is then placed upon the pin *c* so that the center of the lower end of the broken screw rests upon the point of the lower pin *c*; the upper pin *d* is next screwed down with the nut until it is firmly fastened upon the upper end of the broken screw. When everything is in order, the wheel on top is turned, by which the lower and upper pin is revolved, and the broken screw is extracted. A close inspection and a little study of the illustration will readily suggest the wanting parts of explanations.

To Dissolve Silver from Silvered Articles.

Cold Bath.—For dissolving silver in the cold, the objects are hung in a large vessel filled with the following mixture: Sulphuric acid 66° B., 10 parts; nitric acid at 40° B., 10 parts. The articles remain in this for a greater or less length of time, according to the thickness of the coat of silver to be dissolved. The liquid when it does not contain water, dissolves the silver without sensibly corroding copper and its alloys; therefore avoid introducing wet articles into it, and keep the liquid perfectly covered when not in use. As far as practicable, place the articles in the liquid so as not to touch each other, and in a vertical position, so that the silver salt will fall to the bottom. In proportion as the action of the liquid diminishes, pour in small and gradual additions of nitric acid. Dissolving silver in the cold is regular and certain, but slow, especially when the proportion of silver is great.

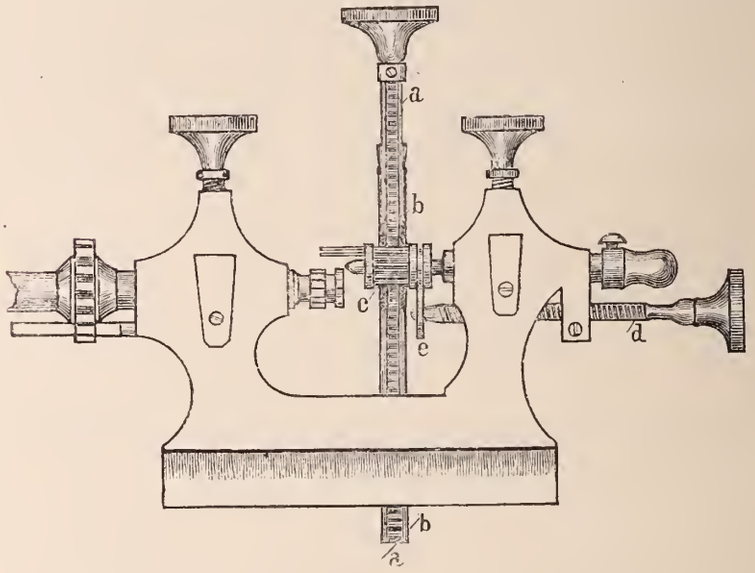
Hot Bath.—Nearly fill an enameled cast iron pan with concentrated sulphuric acid, and heat to a temperature of from 300° to 400° Fahr.; at the moment of using it, pinches of dry, powdered saltpeter are thrown into it; then hold the article with copper tongs in the liquid. The silver rapidly dissolves and the copper or its alloy are not sensibly corroded. According to the rapidity of the solution more or fewer pinches of saltpeter are added. All the silver has been dissolved when, after rinsing in water and dipping the articles into the cleaning acid, they present no black or brown spots—that is, when they appear like new metals.

These two methods are not suitable for removing the silver from wrought and cast iron, zinc or lead; in these cases it is preferable to invert the electric current in a cyanide bath, or to use mechanical processes. Old dissolving liquids become green after use; to recover the silver they are diluted with four or five times their volume of water; then add hydrochloric acid or common salt. The precipitation is complete when the settled liquor does not become turbid by a new addition of common salt or by hydrochloric acid. The resulting chloride of silver is separated from the liquid either by decanting or filtering, and is afterwards reduced to the metallic state by one of the usual methods.

Burnishing Tool Without Drill-Bow or Foot-Wheel.

IT WOULD indisputably be a great convenience if the burnishing tool were always ready for operation without accessories, so that the pivot could be burnished without tedious adjustment of the tool. The following device, which is the invention of a German watchmaker, seems to be of such a character.

As will be seen from the illustration, the rotary motion is imparted by a rack and pinion; the rack *a a* moves in shell *b b*, and is furnished



with a milled head on top, for better management. This rack depths into a hollow pinion *c*, which is placed movably upon the center of the burnishing tool, in place of the carrier, and is furnished with two carrier pins. By this arrangement the piece to be burnished can by one up and down passage of the rack, be rotated three times. A guide bar with a weak cylindrical spring is located behind the rack, for greater security. The spring is stretched by the downward passage of the rack, which it causes to ascend of its own accord. To enable the carrier to be always used in the same fastening, the pinion *c* is left long enough to be easily moved to and fro by means of a guiding screw *d*, furnished in front with a disc *e*, which seizes into a groove of the carrier.

"Although," says the inventor, "it may be thought by some that my apparatus, judged at the first glance, is not as handy as it really is, the person will find on using it that the continual uniform pressure is a great preference. The piece to be furnished can be readily fastened in and inspected if there is sufficient shake; activity begins when the carrier is set into motion by means of the rack, and ceases when this is no longer operated, the pivot remaining quietly in its bearings. The tool is constructed in such a manner that should the operator prefer the drill-bow or fly-wheel, he can attach it without any inconvenience."

The Chronometer Escapement.*

(WRITTEN FOR THE CIRCULAR)

By RICHARD LANGE, Glashütte, Germany.

Glashütte, February 24, 1890.

To the Editor of the Jewelers Circular:

This article was recently published in a German horological journal, but I have since essentially altered and enlarged it. I think that the article will be of general interest to your watchmakers, because besides the graphic directions for a correct construction, it also contains the tables for the manufacture of a correct chronometer escapement, which tables until now existed only for the anchor escapement. It is possible from these tables, therefore, to make the whole chronometer escapement as well as any wanting parts. For the sake of greater completeness I have computed the tables also for the German chronometer escapement, because this is becoming known abroad and being received with favor. RICHARD LANGE.

(*Continued from page 40, April, 1890.*)



IN ORDER to prevent the blueing, it is better to envelop the spring in a piece of sheet platinum or to coat it with soap and then to temper in petroleum; it will then remain almost white, and sometimes it is only necessary to polish it with a piece of wood and rouge. The interior may be grained or if necessary, polished, with a round piece of wood, rotated with the drill-bow. The spring is then cleaned either in benzine or in soap and water, next placed upon a somewhat larger cylinder with a thread cut in screw form, corresponding to the width of the coils, and annealed bluish grey; it is afterwards polished, cleaned and mounted upon a smooth cylinder somewhat larger than the interior of the spring, and annealed blue.

All springs in constant use lose a little of their elasticity by the continued bending; the balance spring as well as the detent spring becomes gradually a little softer by this continued flexation. If, now, for instance, the balance spring is too hard, harder than the detent spring, and gradually loses its strength, although not to the same degree as the detent spring does, it will begin to accelerate little by little. On the other hand, if the balance spring is softer than the detent, the chronometer will retard. It is an advantage, however, when, as mentioned in the first case, the chronometer accelerates somewhat, because the thickening of the oil will gradually produce a small change of rate of the isochronal spring. The balance spring is generally from 11 to 13 coils long.

Fastening the Spring.—When the balance spring is finished in the above described manner, the terminal curves have yet to be bended. In the English chronometers, the ends of the balance lies nearly altogether in the center between the exterior coil and that of the balance. The balance spring is then fastened in the collet, and enough is broken off so that the balance will make 240 vibrations per minute. In order to produce isochronism it is best if the points of fastening stand almost above each other (at about an angle of from 300° to 320°.)

Position of the Balance Spring.—The correct position of the balance spring in relation to the rate, is such that when the balance is conducted slowly forward and the finger lifted up after the impulse has been imparted, the latter as well as the detent spring continues its journey; in the same manner, when the balance is slowly conducted back toward the other side, the detent must keep on going until the unlocking spring drops from the unlocking pallet. The correct position of the balance spring is therefore in the center between the drop of the wheel tooth upon the impulse jewel (in its forward motion) and the drop of the spring from the unlocking jewel (on its return.)

The details for the manufacture of a correct chronometer escapement having been given, I proceed to the method of calculation, which will be of interest to every scientifically educated watchmaker. The tables to be appended were prepared on the basis of these results.

ASCERTAINING THE MAGNITUDES FOR THE CHRONOMETER AND THE METHOD OF CALCULATION.

From the construction, result the following proportions, when the wheel radius = 1 is taken.

A. The total angle of lifting of the balance is 45°.

As previously stated, the angle

$$\alpha = \frac{22}{2} = 11°, \text{ and the angle } \beta = 22\tfrac{1}{2}°.$$

The total lifting of the balance is as stated = 45°.

1. Wanted: the roller radius

$$r = \frac{R.\sin\alpha}{\sin\beta} = \frac{1.\sin 11°.}{\sin 22°30'} = \frac{0{,}1908}{0.3827} = 0{,}5.$$

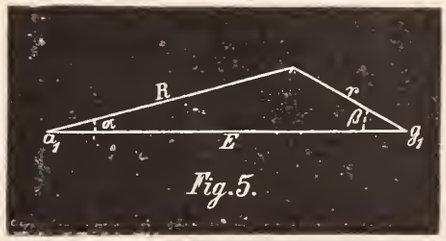


Fig. 5.

2. Wanted: The distance of centers from the escape wheel to the balance

$$E = \frac{R\cdot\sin(\alpha+\beta)}{\sin\beta} = \frac{R\cdot\sin 33°30'}{\sin 22°30'} = \frac{1\cdot 0.5519}{0.3827} = 1.442.$$

These, therefore, are the two calculated values with the given wheel radius. Supposing, now, that in place of the latter, the distance of centers is given. The wanting magnitudes are therefore given in the following with given distance of centers. When the distance of centers E = 1, the following formulæ are obtained:

3. Wanted: The roller radius

$$r = \frac{E\cdot\sin\alpha}{\sin(\alpha+\beta)} = \frac{1\cdot\sin 11°}{\sin 33°30'} = \frac{0.1908}{0.5519} = 0.346.$$

The same value is also obtained by dividing the roller radius, previously ascertained from the wheel radius which = 1, by the previously calculated distance of depthing; therefore

$$\frac{0\,5}{1.44} = 0.346.$$

4. Wanted: The escape wheel radius R.

By placing the distance of centers = 1, the escape wheel radius is ascertained from the formulæ:

$$R = \frac{E\cdot\sin\beta}{\sin(\alpha+\beta)} = \frac{1\cdot\sin 22°30'}{\sin 33°30'} = \frac{0.3827}{0.5519} = 0.693.$$

Although a lifting angle of 45° is mostly used in good chronometers for the balance, there are also those in which the total lifting of the balance amounts to 40°, 50° and 60°. For this reason, the following calculations have been used for ascertaining all these values:

B.—THE TOTAL LIFTING ANGLE OF THE BALANCE IS 40°.

a. Given: The escape radius = 1:

1. Wanted the roller radius

$$r = \frac{R\cdot\sin\alpha}{\sin\beta} = \frac{1\cdot\sin 11°}{\sin 20°} = \frac{0.1908}{0.342} = 0.557.$$

2. Wanted: The center distance of scapewheel and balance E.

$$E = \frac{R\cdot\sin(\alpha+\beta)}{\sin\beta} = \frac{1\cdot\sin 30°}{\sin 20°} = \frac{0\,5}{0.342} = 1.46$$

b. Given: the center distance = 1.

3. Wanted the roller radius $r = \frac{0.557}{1.46} = 0.381$.

4. Wanted the scapewheel radius $R = \frac{1}{1.46} = 0.684$.

C. THE ENTIRE LIFTING ANGLE OF THE BALANCE IS 50°.

a. Given: The scapewheel radius = 1.

1. Wanted: The roller radius $r = \frac{1 \cdot \sin 11^\circ}{\sin 25^\circ} = \frac{0.1908}{0.4226} = 0.45$.

2. Wanted: The center distance of scape wheel and balance E.

$$E = \frac{1 \cdot \sin 36^\circ}{\sin 25^\circ} = \frac{0.5878}{0.4226} = 1.39$$

b. Given the center distance = 1.

3. Wanted: The roller radius $r = \frac{0.451}{1.39} = 0.323$.

4. Wanted: The wheel radius $R = \frac{1}{1.39} = 0.716$.

D. THE ENTIRE LIFTING ANGLE OF THE BALANCE IS 60°.

a. Given the escape wheel radius = 1.

1. Wanted the roller radius $r = \frac{1 \cdot \sin 11^\circ}{\sin 30^\circ} = \frac{0.1908}{0.5} = 0.3816$.

2. Wanted: The center distance of scapewheel and balance,

$$E = \frac{1 \cdot \sin 41^\circ}{\sin 30^\circ} = \frac{0.656}{0.5} = 1.312.$$

b. Given: The center distance = 1.

3. Wanted: The roller radius $r = \frac{0.3816}{1.312} = 0.2907$.

4. Wanted: The wheel radius $R = \frac{1}{1.312} = 0.761$.

In my next installmnt I will give the tables of proportions, composed according to the above computations, for the lifting angles of 40°, 45°, 50° and 60°.

(*To be Continued.*)

Production of Gold and Silver, 1889.

THE following facts relating to the production of gold and silver in the year 1889 are taken from the report of Edward O. Leech, the Director of the Mint, to Congress:

PRODUCT OF THE UNITED STATES

The gold product of the United States was 1,587,000 fine ounces of the value of $32,800,000, against $33,000,000 in the preceding calendar year. Of the gold product of the United States $31,959,047 was deposited at the mints for coinage and manufacture into bars.

The silver product of our own mines was approximately 50,000,000 fine ounces of the commercial value of $46,750,000, and of the coining value of $64,646,464, against an estimated product for the calendar year 1888 of 45,783,632 fine ounces of the commercial value of $43,020,000, and of the coining value of $59,195,000, an increase over 1888 of about 4,216,368 fine ounces of the commercial value of $3,730,000.

In addition to the silver product of our own mines about 7,000,000 ounces of silver were extracted from lead ores imported into the United States and smelted in this country, and over 5,000,000 ounces from base silver bars imported, principally from Mexico, making the total product of our mines, smelters and refineries about 62,000,000 fine ounces of silver.

Of this amount the government purchased for coinage 27,125,357 ounces; there were used in the arts about 6,000,000 ounces; there were exported to Hong Kong, Japan and the East Indies about 9,000,000 ounces, and there were shipped to London, for sale, about 20,000,000 ounces.

DEPOSITS AT THE MINT AND COINAGE.

The total value of the gold deposited at the mints was $48,903,072, of which $42,599,206 were new deposits and $6,303,866 re-deposits.

The total deposits and purchases of silver aggregated 36,297,564 standard ounces of the coining value of $42,237,165, of which 36,074,212 standard ounces of the coining value of $41,977,265 consisted of new deposits.

In addition to the coinage gold and silver bars were manufactured at the mints and assay offices as follows:

Gold	$22,349,752.28
Silver	6,222,751.09
Total	$28,572,503.37

Gold bars were exchanged for gold coin, free of charge, of the value of $26,913,753.55.

The quantity of silver purchased for the silver dollar coinage was 27,125,357 fine ounces, costing $25,379,510, an average cost of $0.93.56 per ounce fine. The amount of silver offered the Treasury Department for sale during the year aggregated 47,965,700 fine ounces.

The total amount of silver purchased for the coinage of the silver dollar from March 1st, 1878, to December 31st, 1889, was 271,632,503 fine ounces, costing $291,470,956, an average cost of $1.06.13 per ounce fine. The coinage of silver dollars for the same period was 349,938,001 pieces. At the average cost of silver for the whole period the cost value of the silver dollar is 82 cents.

COURSE OF SILVER.

The average price of silver in London during the year was $0.93.5 per fine ounce, and the average price of fine bars of silver in New York during the same period was $0.93.6. The highest price reached during the year was 44⅜ pence and the lowest price was 41 15/16 pence.

EXPORTS OF GOLD AND SILVER.

The net loss of gold and silver to the United States by excess of exports over imports of the precious metals is as follows:

Gold	$33,886,753
Silver	14,788,666
Total	$53,675,419

INDUSTRIAL USE OF GOLD AND SILVER.

The amount of gold and silver used in the industrial arts during the calendar year 1889 in the United States was:

Gold	$16,697,000
Silver (coining value)	8,766,000
Total	$25,463,000

The amount of domestic bullion used in the arts was:

Gold	$9,686,827
Silver (coining value)	7,297,933
Total	$16,984,760

PRODUCT OF GOLD AND SILVER IN THE WORLD.

The production of gold and silver in the world during the calendar year 1889 was approximately: Gold, $118,800,000; silver, 125,830,000 fine ounces; commercial value, $117,651,000; coining value, $162,690,000; against a product in 1888 of: Gold, $109,900,000; silver, 109,911,000 fine ounces; commercial value, $103,316,000; coining value, $142,107,500.

Of the increase in the gold product about $3,520,000 were from the mines of Australia; about $4,200,000 from South Africa; and about $1,000,000 from British India.

Of the increase in the silver product about 11,000,000 fine ounces were from the mines of Mexico; 4,000,000 ounces from our own mines and about 1,000,000 ounces from lead ores produced in Australia.



Good Alloy.—The following alloy is said to be a good substitute for silver; it resembles old silver and works like it: Tin, 4.03; lead, 3.54; copper, 55.78; nickel, 13.41; zinc, 23.20; iron, a trace.

Cleaning Brushes.—The best method for cleaning jewelers' and watchmakers' brushes is to wash them in a strong soda water. If the backs are wood you must favor that part as much as possible, for being glued the water may injure them.

Pendulum Jars.—It is well known that all glass jars are not true, and I have no doubt, often cause errors in the rate of regulators. The advantage of the iron jar is that it can be bored out perfectly smooth and true, thus getting rid of all inequalities; no errors from that cause can therefore arise.

Washing Silverware.—Never use a particle of soap on your silverware, as it dulls the lustre, giving the article more the appearance of pewter than of silver. When it needs cleaning, rub it with a piece of soft leather and prepared chalk, the latter made into a kind of paste with pure water, as water not pure may contain gritty particles.

Composition Files.—These files, which are frequently used by watchmakers and other metal workers for grinding and polishing, and the color of which resembles silver, are composed of 8 parts copper, 2 parts tin, 1 part zinc, 1 part lead. They are cast in forms and treated upon the grindstone; the metal is very hard, and therefore worked with difficulty with the file.

Tempering Small Steel Parts.—I temper pinions and other small steel parts in the following simple manner: I take a thin piece of copper, say from an old dial, scrape soap upon it, bend it together, and lay the article between; I then bend the sheet firmly together, make it red hot upon a coal, and afterward anneal it in oil. Not even the most delicate object will warp in this manner.

Soldering Fluid.—An exchange gives the following recipe for making a soldering fluid for soft-soldering jewelry. Dissolve sheet zinc in hydrochloric acid until the acid will take up no more zinc. Turn off the clear liquid and dilute it with alcohol in place of water. When diluted with water, it must retain acid enough to rust, but with alcohol the dilution can go on until the acid is not perceptible by the tongue.

Burnishing Steel.—Probably the best mixture for a white metal polisher used for putting on a good black color on steel is as follows: If the steel is of moderately good temper, use a zinc polisher with diamantine; for soft steel, a tin polisher is better. The diamantine should be mixed in a glass, with very little watch oil. Diamantine mixed with ordinary oil becomes gummy and quite unfit for use in a day or two, and if brought into contact with metals in mixing turns black.

Soft Soldering Articles.—Moisten the parts to be united with the soldering fluid, then, having joined them together, lay a small piece of solder upon the joint, and hold over the lamp, or direct the blaze upon it with the blowpipe, until fusion is apparent. Withdraw them from the blaze immediately, as too much heat will render the solder brittle and unsatisfactory. When the parts to be joined can be made to spring or press against each other, it is best to place a thin piece of solder between them before exposing to the lamp. When two smooth surfaces are to be soldered one upon the other, you make an excellent job by moistering them with the fluid, and then having placed a sheet of tin-foil between them, holding them pressed together over your lamp till the foil melts. If the surfaces fit nicely a joint may be made in this manner so close as almost to be imperceptible. The bright looking lead which comes as a lining of tea boxes, is better than tin foil.

Cold Silvering on Metals.—Mix 1 pint of chloride of silver with 3 parts of pearl ash, 1½ parts of common salt, and 1 part of whiting, and well rub the mixture on the surface of brass or copper (previously well cleaned) by means of soft leather, or a cork dipped in the powder. When properly silvered, the metal should be well washed in hot water, slightly rendered alkaline, and then wiped dry.

A New Cement.—Take 2 ounces of clear gum arabic, 1½ ounces of fine starch and half an ounce of white sugar. Pulverize the gum arabic and dissolve it in as much water as the laundress would use for the quantity of starch indicated. Dissolve the starch and sugar in the gum solution. Then cook the mixture in a vessel suspended in boiling water, until the starch becomes clear. The cement should be as thick as tar, and kept so. It can be kept from spoiling by dropping in a lump of gum camphor or a little oil of cloves or sassafras. This cement is very strong indeed, and will stick perfectly to glazed surfaces, and is good to repair broken rocks, minerals or fossils.

Tarnish on Electro-Plate Goods.—This tarnish can be removed by dipping the article for from one to fifteen minutes—that is, until the tarnish shall have been removed—in a pickle of the following composition: Rainwater, 2 gallons, and potassa cyanuret, ½ pound. Dissolve together, and fill into a stone jug or jar, and close tightly. The article, after having been immersed must be taken out and thoroughly rinsed in several waters, then dried with fine clean sawdust. Tarnish on jewelry can be speedily removed by this process; but be careful to thoroughly remove the alkali, otherwise it will corrode the goods.

To Clean Watch Chains.—Gold or silver watch chains can be cleaned with a very excellent result, no matter whether they be mat or lustrous, by laying them for a few seconds in pure aqua ammonia; they are then rinsed in alcohol and finally shaken in clean sawdust, free from sand. Imitation gold and plated chains are first cleaned in benzine, then rinsed in alcohol, and afterwards shaken in dry sawdust. Ordinary chains are first to be dipped in the following pickle: Pure nitric acid is mixed with concentrated sulphuric acid, at the rate of 10 parts of the former to 2 parts of the latter; a little table salt is mixed to this. The chains are boiled in this mixture, then rinsed several times in water, afterwards in alcohol, and finally dried in sawdust.

Grinding Glasses.—Provide two pieces of cork, one concave and the other convex (which may be cut to shape after fitting to lathe). Take a copper cent or other suitable article and soft solder a screw to fit the lathe, and then wax it to the cork; then get a twenty-five cent emery wheel, such as is used on sewing machines, and you have a complete outfit for cutting your watch glasses. Polish the edge on the zinc collar of the emery wheel, or use a piece of zinc to do it. The other cork should be waxed to a penny and centered. The spectacle lenses may be cut on the same emery wheel, if the wheel is attached to the lathe so as to revolve. Another method is to take a common piece of window glass (green glass is the best) and make a grindstone of that, using the flat surface to grind on. Cement it on a large chuck, the glass being from 2 to 2½ inches in diameter.

To Polish Aluminium.—M. Mouray recommends the use of an emulsion of equal parts of rum and olive oil, made by shaking these liquids together in a bottle. When a burnishing stone is used, the peculiar black streaks first appearing should not cause vexation, since they do not injure the metal in the least, and may be removed with a woolen rag. The object in question may also be brightened in potash lye, in which case, however, care must be taken not to have the lye too strong. For cleaning purposes, benzole has been found best. Objects of aluminium can be electro-plated without any difficulty, and Mouray succeeded in imparting to them a bright white luster in passing them successively through a weak bath of hydrofluoric acid and aqua fortis. The effect obtained was quite surprising it is said.



The Rare Metal Uranium—A lode of which was discovered in a Cornwall, Eng., mine recently, has been developed, and is believed to be extremely valuable. Hitherto the only scource of uranium has been isolated pockets and patches. The Cornwall works expect to turn out about half a ton of metal a week. Owing to its great scarcity the market price has been about $2,000 per ton.

Swindle.—A correspondent of a German jewelry periodical complains that a number of "goldsmiths of his acquaintance have been swindled by a man selling what appears at first sight to be gold washed from gold-bearing creeks. In reality the material is nothing but brass, copper, or the like made into small nuggets to resemble gold nuggets, and then slightly gilt."

The Pearl Fisheries at Ceylon.—The pearl fisheries at Ceylon have this year been very lucrative. In the course of 22 days, 50 divers raised 11,000,000 shells, which were sold for 24 shillings (English) per 1000 shells. The government received as its share £20,000, and the divers earned £6,400. The largest pearls have in Ceylon a value of from £40 to £60, while in Europe they bring three times as much, and single specimens even more.

Costly Clock.—Among the clocks of the important Marquis collection, which was sold in February at the Hotel Drouot, Paris, was a very pretty one in the shape of an ovoid case, of a sea-green color, with flowers mounted in gilt brass beautifully chased, style Louis XVI. The mounting consists of a crown of godroons running around the top of the vase, a frieze of foliage in the middle of which there is an oval opening, disclosing a portion of a revolving dial, two cock's heads formed into handles and linked with garlands of flowers circling the vase, etc. This remarkable clock, 36 centimeters high and 42 centimeters wide, was sold for 11,000 francs.

Valuable Ring.—The diamond seal ring of the unhappy King Charles I. of England, is of an inestimable intrinsic and artistic value. It is supposed that he made it himself, as he had the reputation of being a very skillful silver and goldsmith, and spending his leisure hours working at the bench. The intaglio of the ring contains the coat-of-arms of Great Britain and the monogram of the King. After his decapitation, the ring was inherited by his dethroned son, who during his exile in France was reduced to such straits that he was forced to part with it. The well-known French traveler Tavernier bought it, and in his subsequent journey to the Orient he showed it to the Shah of Persia, who paid him a fabulous sum for it. The ring has since then been jealously guarded in the Persian treasury vault.

Independence.—The Jewelers' Circular has at stated times, notably in its issue for April, spoke of an old watchmaker named Göring, who recently attained his 106th birthday, but was still working at the bench. The fact of his demanding a credit at a material store, and stating his indigent condition to the dealer, first drew the attention of the horological unions throughout Germany to him. Balls, festivals etc., were instituted and in a short time a sufficient sum of money was collected, to keep the old gentlemen above want for the remainder of his days. Being a bachelor he kept "Bachelors' hall" ever since his young days. Some kind-hearted watchmaker proposed to pay for his board and lodging at a good boarding-house a suggestion which Mr. Göring utterly flouted. He was born near Chaux-du-fonds, Switzerland, and the Overseer of the Poorhouse near Hamburg, offering him a finely finished room at his institution with plenty to eat and drink, Göring indignantly replied; "I am a Swiss and no free Swiss permits himself to be shut up in prison pens. I do not accept." He is still cooking his own meals.

A Well-Known Goldsmith of the Middle Age.—The celebrated German painter Herman Prell last year finished a fresco painting with the subject of "The first visit of Emperor Henry II. to Bishop Bernward, in the year 1002." The venerable, art loving bishop, who as a celebrated goldsmith, receives famous artists, stands at twilight upon the steps of the dome, still in course of erection, while behind him are the prelates of his chapter; the emperor stands among numerous monuments, the doors of the dome, the Bernward column, the Bernward cross, etc., all of which the worthy bishop made with his own hands. The emperor's suite with banners and other paraphernalia, fills the dome yard, and the masons are mounting the stairs to enable themselves to see the emperor.

To All Whom it may Concern.—From an item in a German horological journal, it appears that a picture of the inventor of watches, Peter Herlein, hangs in the meeting room of the German journeymen watchmakers at Nuremberg. The very ticklish question was asked a short time ago during one of their meetings, whether anybody knew if this picture were a veritable counterfeit of the gentleman. No one, it appears, could answer in the affirmative, and it was then resolved, that a general address be issued to all the watchmakers of Germany asking them to forward to the society a copy of a true and correct picture, if they had one. No person however, was designated to attest to the correctness of the likeness. Peter Hele, or better said, Herlein, was born about 1480, and buried in Nuremberg in August 1542.

Novelty.—A German watchmaker has invented the following novelty which may possess some merits. In the introductory clause of his patent, he recites that he has invented a practical top-plate for work benches. He says that both glass plates and paper are used at present, upon which to place the small parts of watches. The former, although quite thick, are nevertheless fragile; beside this, they are too smooth and inclined to be scratched in the course of time, thereby becoming unsuitable. Paper, again, is open to several objections, the first of which is, that it soils very easily; it tears and must be replaced frequently; as only good paper can be used, its cost is quite an item. Impelled by these reasons, he has invented a celluloid top of bluish white color; when dirty it can easily be cleaned with benzine or soap and water; when scratched it may be ground off with pumice stone powder. It is to be fastened either with small wire nails and a beading, or else (which is much better,) by being glued upon the wood top of the work bench.

A Joke On Berthoud.—The following anecdote was recently published by an old member of the Academy of Sciences of Paris, who vouches for its truth in every particular. Berthoud being a member of the Academy, used occasionly to deliver lectures on horology, which, although full of science were very tiresome and prosy to a non-horologist. It was of no great interest to the medical man, the astronomer or the philosopher, what should be the length of the balance spring, or whether one with terminal curves were preferable to a flat one. During one of these inflictions on the their patience one of the members passed to his neighbor the following stanza and then went out.

Berthoud, quand de l'échappement
Tu nous traces la théorie,
Heureux qui peut adroitement,
S'échapper de l'Academie!

which may be translated about as follows:

"Berthoud, when of the escapement,
You trace us the theory,
Happy he who can adroitly
Escape from the Academy."

The latter read it, took the hint and passed it to his neighbor, and finally, when Berthoud finished his lecture, he "summed up his findings" only to the president and secretary, the other members having "escaped."

RECENT PATENTS.

The following list of patents is compiled from the records of the United States Patent Office, and specially reported to THE JEWELERS' CIRCULAR.

Issue of April 29, 1890.

TRADEMARK MARK PATENT NO. 17,829.—EYEGLASSES AND SPECTACLES.—Barnhart Mincer, Marion, Ohio. Application filed February 3, 1890. Used since November 1, 1899. "The words 'World's Fair.'"

TRADEMARK PATENT NO. 17,838.—WATCH-MOVEMENTS.—AMERICAN WALTHAM Watch Company. Waltham, Mass., and New York, N. Y. Application filed December 21, 1889 Used since 1854. "The words 'American Watch Co.'"

426,438. WATCHMAN'S TIME-RECORDER. CHARLES E. EGAN, AND HENRY F. GRAY, Columbus, Ohio, assignors by direct and mesne assignments, of part to Herbert D. Bennett and Albert G. Gault, same place. Filed Nov. 23, 1889. Serial No. 331,399. (No model.)

426,625.—EYEGLASSES.—STACY B. OPDYKE, NEW HAVEN, CONN. FILED MAY 7, 1888. Serial No. 273,045. (No model.) The combination of the nose-clasps of a pair of glasses with a metal strip or support having clasps for attachment to the nose-clasps, and the winding of elastic material such as horse hair thereon, having its ends secured.

426,557.—APPARATUS FOR ORNAMENTING HOLLOW WARE. RUSH P. CHAPMAN, Hartford, and Edwin T. Carter, Meriden, Conn. Filed Feb. 28, 1890. Serial No. 342,083.

426,808.—TIME GAS-LIGHTER.—ADOLPH J. HAUERBACH. SALT LAKE CITY, Utah. Filed Aug. 7, 1889. Serial No. 320,002. (No model.)

426,861.—BURNISHING-TOOL HOLDER —SIMON ROSS, JR., CINCINNATI, OHIO. Filed Oct. 31, 1889. Serial No. 328,762. (No model.)

426,927 —WATCH-BOW FASTENER. OSCAR R. DECKER, ROCHESTER, IND. Filed June 11, 1889. Serial No. 313,889. (No model.)

426,999.—BUTTON.—RUSSELL H. LEWIS, PROVIDENCE, R. I., ASSIGNOR TO Albert Eddy, same place. Filed Aug. 5, 1889. Serial No. 319,786. (No model.) A separable button consisting of a head provided with a post having an annular groove near its end, a disk provided with a tubular shank having an annular interior projection, the disk and tubular shank being split near the end of the shank, and a cap inclosing the split disk.

Issue of May 6, 1890.

DESIGN PATENT NO. 19,802.—SPOONS, &C.—GILBERT L. CROWELL, JR., Arlington, N. J., assignor to Dominick & Haff, New York, N. Y. Application filed March 21, 1890. Serial No. 344,843. Term of patent 7 years.

DESIGN PATENT NO. 19,803.—BACK FOR BRUSHES, &C.—GILBERT L. CROWELL, JR., Arlington, N. J., assignor to Dominick & Haff, New York, N. Y.. Application filed January 30, 1890, Serial No. 338,666. Term of patent 7 years.

DESIGN PATENT NO. 19,822.—CLOCK CASE.—ARTHUR O. JENNINGS, SOUTHPORT, CONN. Application filed April 15, 1890. Serial No. 348,079, Term of patent 14 years.

DESIGN PATENT NO. 19,830.—JEWEL SETTING.—NATHANIEL L. RIPLEY, Boston, Mass. Application filed March 12, 1890. Serial No. 343,666. Term of patent 3½ years.

LABEL NO 6,207.—TITLE: "WASHINGTON, D. C., 1890." (FOR SILVER AND Silver plated ware.)—Emmons S. Smith and Edward J. Wardwell, Washington. D. C. Application filed April 11, 1890.

LABEL NO. 6,208.—TITLE: "WASHINGTON, D. C." (FOR SILVER AND SILVER Plated Ware.)—Emmons S. Smith and Edward J. Wardwell, Washington, D. C. Application filed April 11, 1890.

427,072.—WATCH REGULATOR.—WILLIAM GOLDTHWAIT, LONG MEADOW, MASS. Filed August 22, 1888. Serial No 283,511. (No model.) In a watch regulator, a balance-cock having a threaded rod or screw arranged therein, a nut traversing the screw or rod, a lever pivoted between its ends to the balance-cock and arranged to engage a regulator ring at one end and the nut at the opposite end, and a spring arranged to bear upon the nut and prevent lost motion.

427,172.—BUTTON.—STEPHEN C. HOWARD, PROVIDENCE, R. I., ASSIGNOR TO Howard & Son, same place. Filed January 20, 1890. Serial No. 337,445. (No model.) A button-head or analogous article consisting of a plate or disk of base metal, a rim imposed on one side of the same, and a larger plate or disk made of or surfaced with precious metal and having its edges turned forwardly around the rim and thence backwardly toward the first-named plate or disk.

427,265.—EAR-WIRE FOR EAR-RINGS. — EMIL A. LEHMANN, BROOKLYN, assignor to Waterman & Lehmann, New York, N. Y. Filed Oct. 19, 1889. Serial No. 327,542. (No model.) An ear-wire for ear-rings, provided in its upper rear part with a thickened or swelled part for retaining the ear-ring in position on the lobe of the ear.

427,292.—CLOCK-WINDING MECHANISM.—ARCHIBALD BANNATYNE, WATERBURY, Conn., assignor to the Waterbury Clock Company, same place. Filed Feb. 7, 1890. Serial No. 339,555. (No model). In the winding mechanism of a clock, the combination, with the mainspring-barrel, mainspring-arbor, and the winding-key of the clock, of a ratchet having two hubs made integral with it, and respectively projecting from its opposite faces, one hub having an opening to receive the winding-key and the other hub being shouldered to conform to the thickness of the movement-plate through which it passes, and having the mainspring-barrel secured to it on the opposite side of the plate from the ratchet, so that the ratchet and the barrel will bear directly against and are supported by the opposite faces of the plate, and having an opening formed in it to receive one end of the mainspring-arbor, these openings being formed in the hubs communicating with each other.

427,381.—AUTOMATIC CLOCK-WINDING MECHANISM —OTTO URBAN, NAGY Kikanda, Austria-Hungary, assignor to Ignaz Scheinberger, same place. Filed Oct. 26, 1889. Serial No. 328,356. (No model.) In combination, the winding-arbor, the ratchet thereon, the pawl, the disk carrying the same, an operating rope extending from the disk in one direction, a retracting rope extending from the disk in the opposite direction and having connection with a weight, a motor-weight and a lever in the path ofthe weight to be operated thereby, the lever being arranged to lift the retracting-weight when the mechanism is wound.

427,438.—MINER'S SPECTACLES.—FELIX G. MCCONIHAY, LEWISTON, W. VA. Filed Oct. 7, 1889. Serial No. 326,183. (No Model.)

427.477.—MACHINE FOR GRINDING PEARL, IVORY, &C.—JOSEPH H. LAWLESS, Brooklyn, N. Y. Filed July 23, 1888. Serial No. 280,732. (No model.)

427.501.—APPARATUS FOR ORNAMENTING WATCH-CASES. &C. EDWARD C. CHAPPATTE, Philadelphia, Pa. Filed Aug. 14, 1889. Serial No. 320 671. (No model.)

Issue of May 13, 1890.

DESIGN PATENT NO. 19,834.—JEWELER'S FINDING STRIP.—EZRA SPENCER DODGE, Providence, R. I. Application filed January 31, 1890. Serial No. 338,811. Term of patent 7 yeers.

DESIGN PATENTS NOS. 19,840 AND 19,841.—SPOON OR FORK HANDLE.—Arthur G. Rogers. Meriden, Conn., assignor to C. Rogers & Bros., same place. Applications filed March 24, 1890. Serial Nos. 345,167 and 345,168. Term of patents 14 years.

DESIGN PATENT NO. 19,842.—SURFACE ORNAMENTATION OF TABLE-WARE.—Henry C. Schrader, Wheeling, W. Va. Application filed November 7, 1889. Serial No. 329,573. Term of patent 3½ years.

427,581.—WATCHMAN'S TIME RECORDER. JOHN W. LATTIG, SOUTH BETHLEHEM, PA. Filed September 12, 1889. Serial No. 323,736. (No model.)

427,592—BRACELET,—JAMES R. MATHEWSON, WRENTHAM, MASS., ASSIGNOR to William H. Wade and Edward P. Davis, both of same place. Filed Jan. 16, 1890. Serial No. 337,125. (No model.) In this bracelet there are hollow links or shells, provided with two opposite holes, the former being a small and the latter a large hole, which links or shells are arranged or strung on a spring, whereby the large opening or mouth of each link overlaps or takes in a portion of the next link having a small hole thus keeping the spring concealed.

427,593.—BRACELET.—JAMES R. MATHEWSON, WRENTHAM, MASS., ASSIGNOR to William H. Wade and Edward P. Davis, both of same place. Filed Jan. 16, 1890. Serial No. 337,126. (No model.) In this bracelet there is combined with the shells or links provided with openings on their inner sides and opposite openings for the admission of a spring, of collets of size to slip over the spring and through the openings, whereby the spring is concealed at the openings.

427,631.—JEWELER'S CASE.—CHARLES F. D. SPRINGFELS, BUFFALO, N. Y. Filed Jan. 20, 1890, Serial No. 337,465. (No model.) In a jeweler's silver case, a self-acting clamping retainer for the said ware, consisting of a base, two parallel fixed and obliquely-notched side walls, a central movable obliquely-notched clamping piece, and a spiral spring for retracting the clamping-piece, which has a stop, for limiting its back movement.

427,664.—WATCH-CHAIN ATTACHMENT.—RICHARD BRESCH, LEIPSIC SAXONY, Germany. Filed Aug. 24, 1889. Serial No. 321,864. (No model.) A portable watch-stand comprising of a frame, a slotted holder adapted to receive the neck of the bow of a watch, and two legs adapted to be protruded from the frame for supporting a watch.

427,699.—SEPARABLE COLLAR BUTTON.—ADAM LOOS, TOLEDO, OHIO, ASSIGNOR of one-third to Joseph W. Flowers, same place. Filed March 10, 1890. Serial No. 343,336. (No model.) In a separable collar-button, the combination with the shoe, of an outer shank-tube secured to the shoe, an inner shank-tube, shorter than the outer tube, secured within the latter and slotted and recessed, a spring bearing against the inner tube, a hollow cap provided at its rear side with a disk perforated to receive the end of the shank, and a post secured within the cap and provided on its free end with a laterally-projecting key.

428,703.—BUTTON,—DAVID D. MUMMA, HARRISBURGH, PA. FILED FEB. 13, 1890. Serial No. 340,353. (No model.) In a button the combination, with the tubular spring-shank having the longitudinal opening contracted integral upper end, and central depression, of the stem having the head for engaging the depression and contracted integral end, and the pivoted shoe mounted on the upper end of the stem.

427.757.—WATCH-CASE PENDANT. FRANK G. FAXON, MOUNT MORRIS, N. Y. Filed Jan. 6, 1890 Serial No. 336,040, (No model.) In a transversely-divided watch-pendant, the combination, with a capsule or casing made in two parts, forming a butt-joint at about the plane of the bow-journals, the lower part being integral with the neck of the pendant, of upper and lower filling pieces or bushings fitting in the casing and having bearings for the bow-journals, the divisions between the bushings being on inclined planes, so as to break joint with the division between the two parts of the capsule, and a central tube or sleeve connecting the parts of the pendant-neck.

427,781.—ELECTRO-PNEUMATIC-CLOCK SYSTEM. CARL A. MAYRHOFER, BERLIN, Germany, assignor, by mesne assignments, to the Electro-Pneumatic Time Company, New York, N. Y. Filed Dec. 5, 1889. Serial No. 332,750. (No model.)

427,811.—Machine for Centering and Countersinking.—Gustav Wagner, Metzingen, Wurtemberg, Germany. Filed Sept. 24, 1889. Serial No. 324,979. (No model.)

428,020.—Watchmaker's Staking-Tool and Lathe.—Joseph G. Rawls, Wilson, N. C. Filed Aug. 29, 1889. Serial No. 322,301. (No model.)

427,924.—Art of Making Ingots for Jewelers' Use.—Henry T. Smith, Providence, R. I. assignor, by direct and mesne assignment to Roswell C. Smith, trustee same place. Filed Feb. 14, 1890. Serial No. 340,407. (No model.)

427,653.—Watch.—Heinrich Albert, Lauenstein, Germany. Filed July 3, 1889. Serial No. 316,408. (No model.)

428,056.—Making Seamless Gold-Plated Wire.—Charles R. Smith, Providence, R. I., assignor of two-thirds to Edward D. Williams and Frank M. Mathewson, same place. Filed March 8, 1890. Serial No. 343,152. (No model.)

Issue of May, 20, 1890.

Design Patents No. 19,844 to 19,846, inclusive.—Handle for Canes Umbrellas, &c.—Charles L. Dreher, Lancaster, Pa. Applications filed April 16, 1890. Serial Nos. 348,234, 348,235, and 348,237. Term of patents 3½ years.

428,087.—Process of Electric-Deposition.—Davis Garrett, Kansas City, Kansas, assignor of one half to James Clark, same place. Filed Dec. 4, 1888. Serial No. 292,648. (No model.) This process of manufacturing articles having a base-metal body and a precious-metal surface by electro-deposition, consists in first making a mold or matrix of a metal or alloy fusible at a lower temperature than either of the metals to be deposited; second, depositing a thin film of bright metal on the matrix or mold; third, depositing the precious metal on the thin film of bright metal; fourth, depositing the base-metal body on the coating of precious metal; fifth, melting away the fusible mold or matrix, and finally removing the preparatory film of bright metal by buffing.

428,103.—Time-Recorder. Alfonzo L. James, Buffalo, N. Y. Filed Nov. 25, 1889. Serial No. 331,492. (No model.)

428,236.—Self-Heating Soldering-Iron. Alfred Sundeen and Swan B. Molander, Mora, Minn. Filed Oct. 4, 1889. Serial No. 326,009. (No model.)

428,339.—Bangle.—Joseph P. Howard, New York, N. Y. Filed Mar. 5, 1890. Serial No. 342,721. (No model.) A bangle comprising two outer rings and several intermediate rings, each intermediate ring being formed with a lateral loop loosely embracing the adjacent ring, and each outer ring being formed at each terminal of the wire with a lateral eye loosely embracing an adjacent intermediate ring.

428,417.—Tool for Enameling Watch-Dials.—Eppa H. Ryon, Canton, Ohio. Filed Mar. 10, 1890. Serial No. 343,228. (No model.)

428,447.—Bracelet.—Leonard S. Beals, Long Island City, assignor to Magerhans & Brokaw, New York, N. Y. Filed Dec. 7, 1889. Serial No. 332,869. (No model.) A bracelet consisting of front links and rear links pivoted at the middle of their length and at their ends, and a coiled spring having its ends engaged, respectively, with a front and rear link at or near the middle thereof for moving the links to contract the diameter of the bracelet.

428,583.—Watchman's Time-Recorder.—Charles E. Egan and Henry F. Gray, Columbus, Ohio. Filed July 5, 1889. Serial No. 316,560. (No model.)

428,552.—Process of Melting, Refining, and Casting Metals.—Edward A. Colby, New Haven, Conn. Filed Dec. 17, 1887. Serial No. 258,172. (No model.)

The Jewelers' and Tradesmen's Company.

During the last month, the following accessions have been made to the roll of membership: James E. Wancker, Virden, Macoupin Co., Ill.; William C. Reed, Stamford, Conn.; Samuel Pierson, M. D., Stamford, Conn.; Henry W. Powell, Fort Gratiot City, Mich.; Charles A. McLaughlin, Marion, N. J.; George C. McEwen, Silo Art Co., Newark, N. J.; Samuel H. Kirby, New Haven, Conn.; Alexander F. Flint, Savannah, Ga.; Jesse M. Connelley, Charleston, S. C., and the following of New York City: Frank Doman, Tiffany & Co., Thomas H. Allen, M. D., William W. Babcock, Edward H. Coffin, Alexander J. Comrie, Albert R. Carpenter, Paul Coster, Robert E. Freeman, George W. Goodrich, Charles N. Holmes, Jr., George R. Koehler, Elliott H. Norton, Louis Newman, Jr., Leopold Stern, and John H. Thompson. The claim for a sum to be paid to the beneficiary of E. E. Wadsworth, (the first deceased member) larger than the equitable amount due out of the mortuary fund at the time of his death, has been affirmed by the general term of the Supreme Court of the State of New York, and the case will now go to the Court of Appeals. The issue will be of interest to all assessment societies, determining one of the fundamental principles of assessment, fraternal insurance. Superintendent Daniel M. Fisher, is now visiting Buffalo, Rochester and vicinity, presenting to the jewelry trade therein, the advantages of immediate membership, and is meeting with a gratifying reception.

Bric-a-Brac Corner.

It is strange that consistency is a jewel, for paste is noted for its consistency, and paste diamonds are not jewels.—*Brooklyn Life.*

"M (hic) dear, "said Mr. Lushly as he stood on the steps, "will you open the door?"

"Did you hear the clock?" was the question which came from the upper window.

"Yesh, m'dear. It struck three."

"Well, three strikes are out," and she slammed the shutters, while Lushly sat down on the door steps.—*Washington Post.*

LOOK BENEATH THE CASE.

Beneath a fair exterior
A rascal often lurks:
It is true of men and watches—
You may tell them by their works.

—*Pittsburg Bulletin.*

Enter a nervous-looking gentleman. Turning to clerk behind the counter: "Do you keep sleeve buttons?"

Clerk: "Yes, sir. This way, please."

Nervous Gentleman: "I want a pair of moss agate sleeve buttons."

C.: "Moss agate?" (hunting through the case without discovering any) "I'm not sure that we have moss agate" (still looking for them).

N. G.: "Oh, I suppose not; this is the fourth place I've called." (Suddenly spying a pair in the show case): "There's a pair! Let me see them; you don't seem to know your own stock—"

C. (handing him the pair): Yes, they *are* moss agate."

N. G.: "Of course they are—very pretty, too! How much are they?"

C. (taking them and in vain looking for the price—finally): "Three dollars and a half, sir."

N. Y.: "Three dollars and a half! Are you crazy? I wouldn't give you ten cents for them—homely things—wouldn't have them at any price!" (Exit N. G.)—*The Haberdasher.*

AN UNFINISHED JOB.



First Burglar.—Wal, pal, how'd ye make out wi' that watch club job las' night?

Second Burglar.—Wal, ye see, I guess as how as I wus a leetle late fur de drawin'. Some feller was a watchin' in de store, an'—wal, all I got was de club.

TRADE GOSSIP.

—Tell A. Beguelin sailed for Europe on May 21, by the *Waesland.*

—Wattles & Sheafer, Pittsburg, Pa., have dissolved, and has been succeeded by Sheafer & Lloyd.

—The Waltham Watch Tool Company have purchased ground at Springfield, Mass., and will move there in July.

—George Pitts, Providence, R. I, has removed to 227 Eddy st., where he has more convenient quarters than heretofore.

—A. Winauer sailed to Europe on May 28, by the *Trave*, to look after his numerous watch interests on that continent.

—The firm of Tappan, Berry & Co., Attleboro, Mass., have dissolved, A. B. Robinson retiring. James Hume has been admitted to partnership.

—W. D. McVitty has sold out his store at Norwalk, Ohio, to the Norwalk, Jewelry Co., and has taken a position with Webb C. Ball, Cleveland, Ohio.

—Z. K. Straight, Walla Walla, Wash., after five months labor as one of the representatives in the first Legislature of the new state, is again at the bench.

—S. P. Howard, the widely-known assayer, refiner and sweep-smelter, has moved his works from 380–382 Water street, New York, to 28 Cumberland street, Brooklyn, N. Y.

—Simons Brothers & Co., of Philadelphia, Pa., and Weis & Oppenheimer, of New York, have been admitted to membership in the N. Y. Jewelers' Board of Trade. H. O. Hurlburt, of Philadelphia, Pa., has applied for admittance.

—It is reported that the new clock works of Edward P. Baird & Co., at Plattsburgh, N. Y., are producing 400 clocks per day, and that the management have decided to increase the capacity of the works for the immediate manufacture of watches.

—J. F. Fradley, of J. F. Fradley & Co., 23 John street, New York, has taken a handsome residence in Montclair, N. J., where he will enjoy the mountain air during the summer. He has bought a gun and has a bird dog in training for the mosquitoes.

—The Pairpont M'f'g Co., New Bedford, Mass., have the new addition to their factory well on toward completion now. The machinery has been ordered and will be in motion in season to help supply the fall demand for their salable line of plated ware.

—A unique and beautiful advertisement is that of the Sterling Company, on page 4. If the reader be of that class of individuals "who are not up in dates," he will, by referring to the page daily, never date his letters, checks, etc., a day ahead or a day behind.

—The Secretary of the Treasury, on May 3d, decided that watch keys are dutiable according to the material of which they are composed, thereby changing the classification, which has heretofore been as parts of watches or watch materials dutiable at 35 per cent.

—Key chains are very popular now, and jewelers who may be in need of anything in this line are advised to communicate with Robt. H. Ingersoll & Bro., 65 Cortlandt street, New York, inventors and manufacturers of the "Security" key ring and a large line of key chains.

—The Mt. Washington Glass Co., New Bedford, Mass., have applied for a patent on a new style of finger and berry bowls, called "The Safety Finger Bowl and Berry Bowl." The top of the bowl is bent inward to form a safeguard preventing the slopping of the water or the spilling of the berries when they are being served. They call attention to a number of new patterns in the popular bold deep cuts, namely the "Puritan," "Wheeler," "Tremont" and "Newton."

—The new catalogue that Charles Jacques, importer of fine clocks, 2 Maiden Lane, New York, has just issued, is a veritable work of art. It is, without doubt, the most complete and handsome volume of its kind ever published. Enclosed within a pretty cover are a number of photo-gravure plates, which bring out all the details of the articles illustrated, and picture the numerous clocks, bronzes, etc., before the eyes in all their beauty. The book will prove a valuable addition to the commercial library of every dealer. It can be obtained only upon application.

—Horace S. Bedell, familiarly known as "Old Hundred," died on May 2, after a prolonged illness, with Bright's disease Mr. Bedell for the past ten years has been on the road for Newark jewelry houses, and he was very popular with the trade in the Western section of the country.

—Wolfsheim & Goldsmith, manufacturers of jewelry and silverware cases and sample trunks and cases, are now fully settled in their new quarters at 52 Maiden Lane, where they will have ample facilities to accommodate their increasing business. They have devised a number of specially odd and artistic cases and trays that will add to the effectiveness of any retailer's display.

—Hearn & Braitsch, the well-known manufacturers of cane and umbrella heads, Providence, R. I., have commenced the erection of a new factory building at Elmwood in the suburbs. The new structure, which will be about 160 x 50 feet and four stories high, will probably be ready for occupancy by the middle of July. This move was rendered necessary by the phenomenal increase of their business during the past year.

—The Bay State Watch Case Company, Boston, Mass., held its annual meeting on May 14. The treasurer's report showed a handsome surplus, and the company voted to increase its capital stock. The following officers and directors were elected for the ensuing year: C. F. Morrill, president; Andrew Paul, vice-president; D. C. Percival, treasurer; Dean Southworth, H. F. Veith, William N. Pratt, M. N. Smith, and George A. Carpenter, directors.

—The Boston Jewelers' Club held a meeting and gave an enjoyable dinner at Young's hotel, Boston, on May 10. In the absence of President Charles Harwood, who is at present in Southern California, M. N. Smith, of Smith & Patterson, presided. The other members present included C. F. Morrill, H. M. Pratt, Royal E. Robbins, Jr., A. T. Sylvester, A. J. Patterson, Irving Smith, Andrew Paul, Mr. Carpenter, of the Bay State Watch Company; E. A. Whitney and William Paul.

—The W. C. Edge Co., 46 Green street, Newark, N. J., have been granted a patent on their new "Le Quatrefoil" chain, now advertised in the CIRCULAR. The novelty has been very favorably received by the trade, and a large sale is predicted. The material is used for necklaces, queens, bracelets and chains, and is certainly one of the most attractive patterns that has yet been put upon the market in this fashionable style of jewelry. E. T. Baker is now representing the W. C. Edge Co. on the road.

— Joseph Du Prado, of Tiffany & Co.'s Paris house arrived by the *La Normandie*, on May 26, on a visit to their New York establishment. The last time Mr. Du Prado visited this country was twenty-four years ago. Tiffany & Co. were then at their old store, 550 Broadway, and the site of their present magnificent establishment was occupied by a church, which was considered in those days up-town in the fashionable resident district. The visitor will hardly be less astonished at the strides this house has made since that time, than at the wonderful development of the entire city, especially the up-town portion.

—One of the best advertisements for a watchmaker and jeweler is a watch sign placed in some conspicuous place in front of his shop. It is not only an advertisement, but almost an absolute necessity, as much so as the barber's post before a tonsorial establishment. Lou Barnhart, 110 South Center street, Springfield, Ohio, manufactures a large variety of the latest improved signs, which have advantages over many others. They are perfect in proportion, and very beautifully and artistically designed. They are made of sheet zinc, painted with white lead, gilded with the best XX gold leaf, and are warranted in every particular. These signs are so constructed that they can be placed on a post to revolve or swing on a rod from a building. Dealers needing a sign should send for price list.

—Kent & Stanley, Providence, R. I., manufacturers of the celebrated "Seamless" filled chains have been running steadily since the beginning of the year with about 170 hands. M. Leon Larus, their foreign representative, has been in the country the past month in the interest of the firm, and left for Paris about two weeks ago on the *Aurania.* Through his well-directed efforts a large business is being built up abroad in the "Seamless" chains and other lines of their manufacture, among the latest of which are a large variety of sterling silver goods, and a line of hand-painted miniature brooches mounted in different styles. Their twelve travelers, who are pushing out into all parts of the country, are meeting with pronounced success with these late additions to their stocks, and so far as the "Seamless" chains are concerned, they long ago became a staple in the trade.

—The Progress Watch Case Co., Newark, N. J., successors to Pinnell, May & Co., have removed their New York office to Nos. 41-43 Maiden Lane, Knapp Building.

—Brick has begun to be laid for an extension to the main building of the Towle Mfg. Co.'s factory at Newburyport, Mass. This extension will give the company about 12,000 feet additional floor space.

—Davis & Terrill, assistants of J. H. French, the well-known jewelers' auctioneer, are now selling out the stock of E. Borer, 218 No. Clark St., Chicago, Ill., who is retiring from business after an active career of 19 years.

—A visit to the new office of D. F. Foley & Co., manufacturers of gold pens, pencils, etc., 180 Broadway, New York, will prove to anyone the wisdom of their change. With additional safes, increased space and improved specialties generally, they will be better enabled to attend to their constantly increasing business.

—Chas. A. Whiting, of Wade, Davis & Co., Plainville, Mass., is now in the West with their new line of samples, which is more complete and novel than any they have yet shown. One of the most noteworthy features of their display is a line of rolled plate bracelets comprising six hundred different patterns, probably the most complete showing of this class of goods in the market to-day.

—The suit of Alfred H. Smith & Co. against Henry Clews was again brought up in court on May 7. This time it was on behalf of the defendant, who appealed to the General Term of the Supreme Court from a judgment rendered against him last June, which awarded Alfred H. Smith & Co. possession of a pair of diamond earrings, with damages and costs. It is expected that a decision on this appeal will be rendered during this week.

—D. D. Palmer, proprietor of the Waltham School of Horology, Waltham, Mass., is building an addition to his residence, to be used as a shop and school-room. The new structure will be completed about July 1st, and Mr. Palmer is now in correspondence with many watchmakers in different parts of the country who wish to avail themselves of the superior advantages offered by this institute so soon as the needed room to accommodate them is obtained.

—Hancock, Becker Co., the well-known manufacturers of white stone goods, have moved their factory from 40 Clifton Street to 54 Page Street, taking the shop formerly occupied by Mackinney, Smith & Co., who recently retired from business. With greatly increased facilities and a large number of new designs in their popular line of white stone goods they will be better able than ever to supply the wants of the jobbing trade.

—Negotiations have been completed between Simpson, Hall, Miller & Co. and Charles Casper, formerly President of the Meriden Silver Plate Co., by which the latter is to act as the New York agent for the former's goods. Mr. Casper has had 20 years experience in the silver and plated ware line, which eminently qualifies him for such a position. The business is to be continued under the name of Simpson, Hall, Miller & Co., but Mr. Casper is to have complete control of their New York retail business.

—Mr. Rogers, representing the Sterling Co., has just returned from his first trip to the Pacific Coast, and the Company are much pleased with the success which attended him. George W. Parks is at present on his regular Western pilgrimage, and from the orders already received there is no reason to doubt that the total amount of his sales will exceed that corresponding trip of last year. The Company shall be prepared in the Fall to surprise the trade with some striking and beautiful novelties.

—On May 1, Cross & Beguelin were pleasantly surprised to receive the following letter:

Waltham, Mass., April 20, 1889,

Cross & Beguelin,
21 Maiden Lane, New York.

Gentlemen:—Our records show that your last year's sales of the Whitcomb lathe has exceeded the total of your previous three years' sales, the number you sold in 1889 being 25, while in the years 1888, '87 and '86 the total was 22. We wish to express our thanks for the interest you have taken in our lathes, and the hope that the present year will be more prosperous than the past, and that this year's record will show an increase. There is another pleasant reflection that arises, viz.: that during our business relations there never has arisen any question that has strained the pleasant relations which have always existed between your house and ourselves.

Very respectfully yours,
American Watch Tool Co.

This letter speaks well both for the achievements of Cross & Beguelin as selling agents for the American Watch Tool Co., and for the excellent qualities of the latter's product.

—The Plainville Stock Co., Plainville, Mass., started up on the 11th of May, after a two weeks' shut down, and have been humming ever since to supply the regular demand for their staple line of goods, and at the same time prepare their new samples for the coming season. The trade have long ago learned to expect something novel and choice in design from this concern every recurring season, and they will not be disappointed, while so far as quality and finish are concerned, the trade mark "P. S. Co." is as good as a government bond.

—O. W. Bullock & Co., Springfield, Mass., report that their trade, owing to the judicious advertising of the merits of their goods among the class who are judges of what they want, has never been better than this Spring. They are strong advocates of the maxim:—"American tools for Americans." They are now getting out a new watch bow and ring bender, which will doubtless supersede anything now in the market, and make jewelers happy who have had to struggle to close up a heavy ring, in order to solder it, when reducing its size.

—The Essex Watch Case Co., Newark, N. J., are adding to their force of hands constantly to meet the demand for their celebrated filled cases. They have adopted a new name for their grade of cases formerly called the "Essex," having decided to name these cases "Superior," and apply the name "Essex" to a new and still higher grade of cases which they are now manufacturing. Owing to the exceptional reputation for quality which their cases have attained, they have found quite an extensive demand for diamond ornamented cases stamped with their "Essex" trade mark.

—Frank Mauser & Co., the silversmiths, have moved their entire plant from North Attleboro, Mass., to No. 30 Union Square, New York, a location more convenient to their customers and possessing many additional advantages for the manufacture of the fine grade of goods to which they exclusively confine themselves. They expect to have their new factory running by the 5th or 6th of June, when they will be ready to fill orders. Their spring trade was in excess of last year's and they look forward to a very prosperous fall trade, owing to their superior location and generally increased facilities.

—The reader will notice, by referring to another portion of this issue, that the sale of the bankrupt stock of Henry Rowlands, Brooklyn, N. Y, which J. H. French is at present conducting at 843 Broadway, New York, is by the order of the Supreme Court, in pursuance of the unanimous request of the creditors of Mr. Rowland, to do so. This appointment of Mr. French is testimony of the perfect confidence the trade have in his ability and trustworthiness. On June 18 Mr. French will sell, at the same place, the fixtures of the bankrupt establishment, consisting of burglar proof safe, counters, counter cases, side show cases, Chas. Frodsham regulator, mirrors, etc.

—The rapid development of American art manufactures is well illustrated by the display of the New Jersey Clock and Bronze Works, New Brunswick, N. J., and 94 Duane Street, New York, who are now turning out a very desirable line of goods for the jewelry trade, including statuettes and bronzes in old brass, silver and gilt and old silver finishes; a large assortment of lamps, both standard and banquet, in English underglaze, Faience, imitation Royal Worcester, and a number of very beautiful finishes of their own, such, for example, as the tapestry, a soft and delicate sanded finish, the Adelaide, etc. Onyx tables and standards, and antique vases and jugs in all the fashionable styles form a specially attractive feature of their stock. One of their best selling novelties is the "Annie Rooney" lamp, a dainty little thing which they are pushed to supply the demand. They would direct the attention of the jewelry trade to their line of wrought iron extension and banquet lamps, and their large assortment of plaques and pictures.

—S. C. Scott, of J. T. Scott & Co., 4 Maiden Lane, New York, sailed to Europe on the 21st of last month by the steamship *Germanic*, the object of his trip being to purchase an extensive stock of diamonds for the fall trade. He will spend most of his time in London and Paris, and is expected home about July 1st. During the past two or three years the firm's business in diamonds has so largely increased, that they propose hereafter to make the importation and sale of this class of goods an important feature of their business, so as to better enable them to satisfy their customers' demands. It is with this in view that Mr. Scott visits the European markets. Mr. Scott has had a great deal of experience and is thoroughly posted in the selection of diamonds, having had charge for a number of years past of that portion of the business of the firm of which he is a member. His object will be to select only the better grade of diamonds, and the trade may depend upon it, that the stock he will bring with him on his return will be excellent in every respect.

WHAT THE TRADE SAY OF THEM.

We like the Anti-Swear above all others.

Respectfully,

J. W. Hull & Co.

Grafton, W. Va.,
Nov. 20, 1889.

Everybody using the Anti Swear Button says it is the best yet.

Very truly yours,

George W. Frost.

Sioux Falls, D. T.,
Oct. 25, 1889.

Rochester, Pa., March 8th, 1890.

Mess. J. T. Scott & Co.
4 Maiden Lane, N. Y.

Gentlemen :—When in your store in Sept., 1888, you gave me a pair of *Anti-Swear* Sleeve Buttons for my own use which I have worn ever since and I really think they work better now than when new.

After explaining the working of the different buttons to a customer I invariably sell a pair of Anti-Swear. I am very much pleased with your latest designs.

Very truly,

J. Linnenbrink.

I can endorse the Anti-Swear as the best I have ever seen.

Yours, &c.,

A. C. Collins.

Cleveland, O.,
June 5, 1889.

The Anti-Swear will take first place when once known to the trade.

Very truly,

F. C. Miller.

Belvidere, N. J.,
March 22, 1889.

Washington, Ind.,
Jan. 4, 1890.

Mess. J. T. Scott & Co,

Dear Sirs :

I have tried your Anti-Swear Cuff Buttons during the holiday trade just closed, and find them good sellers, in fact I could sell no other kind when they were shown.

They are simple, strong and durable, and will, I am satisfied, prove to be the button of the future. I have a pretty full stock of other kinds at present but will work them off, and keep nothing but the Anti-Swear.

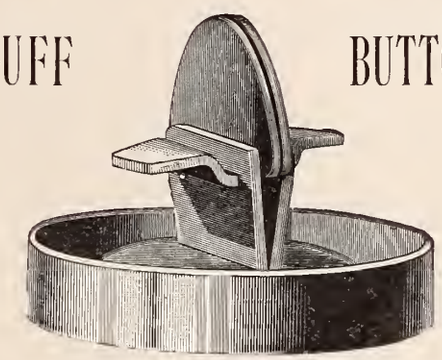
Yours, &c.,

N. H. Jepson.

THE

ANTI-SWEAR

CUFF BUTTON.



OPEN.

Knoxville, Iowa,
Nov. 22, 1889.

Mess. J. T. Scott & Co.,

Dear Sirs :

I bought a stock of your Anti-Swear Buttons in the spring and put them in with my other goods. The Anti-Swear are all gone and the others still remain. *They sell at sight and at good profit. I highly endorse them and the way you have taken to keep them in the legitimate trade.* Send me an assortment by first express, also eight or ten show cards and cuts like enclosed.

Respectfully yours,

D. A. Curtis.

ENDORSED BY THE

OHIO RETAIL JEWELERS' ASSOCIATION.

THE ONLY LINE OF CUFF BUTTONS IN THE MARKET

SOLD EXCLUSIVELY TO THE RETAIL JEWELRY TRADE.

We are now making a large line of these Buttons in Rolled Plate, Gold Front and Solid Gold. ☞ *Orders for Selection Packages Solicited.*

J. T. SCOTT & CO.,

SOLE MANUFACTURERS,

4 Maiden Lane, New York.

—Wightman & Hough have moved their New York office from 196 Broadway to 17 Maiden Lane.

—Riley, French & Heffron have moved their New York office from 178 Broadway to 8 Maiden Lane, up one flight.

—T. H. Kortum, of Shreveport, La., a member of the Jewelers' League, died recently. His stock has been sold out at auction to wind up the estate.

—Chas. F. Gordon & Co., Shreveport, La., are moving into a large new store, which is being fitted up in elegant style. They will have the model jewelry store of the town.

—Alphonse Judis, San Francisco, Cal., has moved into the new *Chronicle* Building, corner Market and Kearny sts., where he has increased facilities for the transaction of business.

—Read, Lincoln & Co. successors to E. Whitney & Co. have moved from Attleboro Falls, Mass.. to 74 Chestnut street, corner Clifford street, Providence, R. I., where they have better facilities for carrying on the business of manufacturing jewelry and novelties in gold, silver and plate.

—The Chalmers-Spence Company would call attention of our readers to the fact that, after May 5th, their offices and salesrooms will be located at 59 and 61 Liberty st., New York, instead of at their factory, 419–425 East Eighth street, as formerly. This will no doubt be a great convenience to many of their customers who are located down town.

—The attention of our readers is called to the advertisement of B. Veit, importer and dealer in watch materials, tools, &c. Mr. Veit has moved his headquarters to 69 Nassau st., New York, where he is prepared to offer to the trade an enlarged and well selected stock of materials, tools and optical goods, at as low prices and on as liberal terms as can be found in the market.

—W. S. Evans has bought out the business of W. H. C. Rudd at Hiawatha, Kans., which has been established eleven years. Mr. Evans was formerly connected with the Waltham, Elgin and Lancaster watch factories. Two years he had been conducting a photographic gallery at Hiawatha, but has returned to the bench. Mr. Rudd is now a travelling salesman for Otto Young & Co., of Chicago.

—An unusually fine pair of balances has just been completed by Henry Troemner, of Philadelphia, for the United States mint. It was made under special contract, and is capable of carrying a load of 10,000 ounces (about 700 pounds) in each pan, and with this great load indicates the addition of the $\frac{1}{100}$ oz. This wonderful sensibility has never before been reached. The beam is 72 inches long, and the entire balance is of the finest workmanship. Altogether it is one of the largest and finest weighing instruments in the world.

—For the running of fans in stores for ventilation and keeping away flies, the "Otto" gas engines are at this season being called for quite extensively. These engines are now made as small as ⅓-horse-power, and are capable of running three to four fans; engines of any amount of power above this are suitable for a larger number of fans or for other work, as polishing, running lathes, etc., that may be met with in the jewelers' trade. Those contemplating improvements in this direction will do well to get all particulars from the "Otto Gas Engine Works," at 33d and Walnut sts., Philadelphia, or from their agents, A. C. Manning & Co., 18 Vesey street, New York.

—John A. Whitcomb, of the American Watch Tool Co., of Waltham, Mass., has just returned from an enjoyable vacation in California. He is one of the "forty-niners" who recently crossed the continent to visit their old stamping grounds. He left Waltham April 10th. California papers reported that he was the youngest of the old men in the party. This undoubtedly grows out of the fact that he is kept bright and young by his intimate connection with the celebrated Whitcomb lathe. He visited the Otay watch factory, and reports that Supt. Wheeler is intensely in earnest in the development of the watch industry He also reports that the Whitcomb lathe is a good deal better known than he is. Among other places, he visited Salt Lake City, and gave considerable consideration to the problem of Mormon social relations, with an idea, it is said, of introducing them into Waltham on his return. During his absence many changes were made in the factory of the company, the number of operatives being increased in preparation for a large advance in business, warranted by the demand for the new Webster-Whitcomb lathe. The company are busy on machinery for the Otay, Trenton and United States factories, and the outlook for the summer is exceedingly good.

—F. Dreher has moved from 16 Maiden Lane, New York, to 69 Nassau street, where he shares the office with B. Veit. He will continue the business of watch repairer for the trade.

—Norden & Co., diamond cutters and polishers, have moved their office and factory from 61 Nassau street, New York, to 32 and 34 John street, where they will devote special attention to all work as heretofore.

—Benjamin F. Samuels, formerly with L. &. M. Kahn & Co., is now representing Henry E. Oppenheimer & Co., importers of diamonds, and manufacturers of diamond jewelry among the New York and Philadelphia trade.

—Day & Clark, 10 Maiden Lane, New York, manufacturers of rich gold jewelry, have ready for the trade some new patterns which should become popular favorites this Fall. Those which particularly attracted our attention were new designs in fancy bead necklaces and brooches, as well as some elegant beadwork in hairpins. Illustrations of some of these will be published in the CIRCULAR during the next two or three months.

—About one hundred and fifty members of the Brooklyn Lincoln Club, of which J. B. Bowden, of J. B. Bowden & Co., is president, gave William Berri, retiring president of the organization, a complimentary dinner in the club house on May 15. The parlors were beautifully decorated. The club numbers among its membership roll some of the most influential citizens of Brooklyn. Among those present at the dinner, were M. L. Bowden, of J. B. Bowden & Co., and E. J. Scofield, President of the New York Jewelers' Board of Trade, and New York agent of the Elgin Watch Company.

—The firm of J. B. Laurencot, 33 Maiden Lane, New York, are rapidly disposing of their stock of French clocks and fancy goods at an immense reduction from importers' prices. The trade should take advantage of this, and acquire fresh and salable goods at a cheap price. The trade should understand, by the way, that the firm are disposing of these goods only at this reduction so as to close out this branch of their business, as in future they intend to devote themselves to importing and dealing in optical goods, of which they will keep a large supply at as low prices and on as good terms as can be found on the market.

—A. H. Jacot, of the firm of Jacot & Son, importers of musical boxes, has just returned from a Western business trip. The trade received very favorably the new styles and improvements in musical boxes of which this firm have been the originators. The evolution of the musical box of twenty-five years ago to the present instrument shows remarkable results in volume and precision of tone, and the new style of interchangeable cylinders which Jacot & Son have introduced, makes the range of tunes of one single musical box practically unlimited. There is no doubt but their store is the true headquarters of the musical box trade.

—The Spencer Optical M'f'g Co., 15 Maiden Lane, New York, have undoubtedly reached perfection in their new oculists' trial frame. They have combined the good qualities of other makes with some important improvements of their own invention. Instead of a cumbersome piece of mechanism, they have succeeded in making a frame of a composition that weighs one-half of an equal volume of steel, so that the entire weight is little more than an ordinary pair of spectacles. This company are also making rims for their test lenses of this wonderful material, and we must say that their complete trial set, No. 952, with antique oak case, is the handsomest oculists' trial case we have yet seen.

—One of the most ingenious devices ever produced in the way of secure fastenings for jewelry is the "Magic Nut," patented and owned by Sexton Bros. & Washburn, 41 Maiden lane, New York. The firm have been applying the device to scarf pins, ear buttons, pendant ear drops, hat pins, studs, etc., for over a year, and it has proved eminently successful. The name "magic" is thoroughly appropriate, as the nut, though extremely simple in operation, almost defies description, and to the uninitiated is a mystery. On another page the nut and its applications are illustrated. By taking the nut by the lower flange between the fingers and giving a slight pressure with the nails into the groove, it is readily slipped upon the pin of the jewelry, and automatically secures itself. Though the pin is made of perfectly plain, smooth wire, no amount of exertion, by taking the nut with the fingers in ordinary fashion, will release it; the secret of its release lies in taking it with the fingers in the same manner as in putting it on to the pin. The advantages of such a catch are obvious; it does away with the screw or notched wire; no time is taken in securing the jewelry on the person; the liability of loss is reduced to the lowest possible minimum, and the mystery of its construction foils the tactics of the light-fingered fraternity.

—L. Combremont, 2 John street, New York, importer of tools and materials, sails for Europe in June, to be absent about one month.

—E. E. Kipling, 182 Broadway, New York, has decided to close out his Providence branch, and is now offering for sale exclusively to manufacturers the entire stock of that department.

—The firm of Jennings & Lowenthal, manufacturers of gold rings, 93 Green Street, Newark, N. J., has been dissolved by mutual consent, and Kaiser & Jennings have succeeded to the business.

—Ketcham & McDougall, 198 Broadway, New York, have a number of new patterns in thimbles, among which may be mentioned a line of gold thimbles with enameled flower decorations or with fluted bands of novel design.

—The Jewelers' Protective Union has cancelled the certificate of S. W. Robinson, traveling salesman for B. F. Norris, Alister & Co., of Chicago, who left his trunks in the depot at Waverly, Iowa, where they were robbed by tramps.

—H. C. Haskell, maker of badges and medals, 11 John street, New York, displays in this issue a number of his newest and most popular designs, some of which, he states, his competitors have paid him the compliment of copying.

—B. H. Knapp, of Smith & Knapp, importers of diamonds and precious stones, and dealers in American watches and cases, 182 Broadway, New York, sailed for Europe last week to purchase a fall stock of diamonds and other precious stones.

—A. J. Stetson, watchmaker with C. S. Ball, Syracuse, N. Y, called at the CIRCULAR office on his way to Philadelphia, where he is to purchase a steam launch for Mr. Ball, to be run on the St. Lawrence River, on the banks of which the latter has a cottage.

—J. Dexter Rood, father of C. D. Rood, of the the Hampden Watch Company, died at his home near Springfield, Mass., on May 10th. He was a prominent man in the business and social communities of that section of Massachusetts, and the funeral was attended by numbers from distant parts of the State.

—S. F. Myers & Co. 48 & 50 Maiden Lane, New York, have received large numbers of orders from the May issue of their *New York Jeweler*, and wide-awake dealers all over the country are beginning to appreciate the fact that they are sure to find in its pages something of special interest to them.

—J. B. Bowden & Co., ring makers, 192 Broadway, New York, report constantly increasing sales of their patent seamless wrought ring. This ring has many advantages over the ordinary plain ring. It is solderless, susceptible of a higher polish, wears better and is more perfect in every way. They claim to be the only manufacturers in the country of a genuine seamless wrought ring.

—The Chicago Jewelers' Association held a meeting in their new quarters in the Adams Express Building, Chicago, on the night of May 20. Otto Young, one of the directors of the Ways and Means Committee of the World's Fair, delivered an address urging members of the trade to increase their subscriptions. A committee of three were appointed to solicit signatures, and the Association voted to increase the subscriptions 50 per cent.

—The three chronometers which H. H. Heinrich, the well-known chronometer maker, exhibited with much success at the Paris Exposition, last year, have been for some weeks past on exhibition at the establishment of R. & L. Friedlander, 65 Nassau St., New York. The Messrs. Friedlander call the particular attention of the trade to their "Monarch" main-springs. They claim that these springs cannot be excelled in temper, color and finish. Every dozen sold is guaranteed. The firm have them for the following movements: Waltham, Elgin, Howard, Hampden and Illinois. The reader should make note of the many interesting statements contained in the firm's advertisement on page 8.

—Lovers of the artistic in the silver novelty line will find a veritable feast for the senses in the new goods which the Alvin M'f'g Co., of Newark, N. J., are now showing for the fall trade. One of the most pleasing novelties consists of a variety of electro-deposited individual salts and ash receivers, formed of two oyster shells placed inversely one upon the other, one constituting the bowl and the other the base or of a porcelain. They also exhibit a very unique line of card cases in perforated silver, and liquor flasks etched in new designs. Another of their specialties well worthy of mention is a large assortment of French briar wood pipes deposited with silver etched in various fanciful designs. Besides these innovations they display an unusually large line of new patterns in cane and umbrella handles and in claret jugs, colognes, etc., overlaid with the beautiful "Alvin ornamentation" now so firmly established in favor with the trade.

Foster & Bailey, 60 Richmond street, Providence, R. I., have an announcement of unusual interest to make in this issue of the CIRCULAR, and our readers will be amply repaid for a thorough perusal of it. In addition to a large number of new patterns in the well-known "Mount Hope" sleeve button, they have a new patented pin called "The Safe Pin," provided with a screw head and chain attachment, so that even if the head comes loose the chain will prevent its coming off, and thus hold the pin securely in place. They have also largely increased their line of ladies' and gents' chains, which was so well received last season, while their line of lockets and charms has the reputation of being the largest and best for the money in the market. But this does not exhaust the catalogue of their novelties for this season by any means. They have a brand new idea in the Henry M. Stanley and Joe Jefferson medallion bracelets in sterling silver, for which a large sale is predicted. The center medallion bears a head of Stanley or Jefferson, while on each side are smaller medallions illustrating the life and character of one or the other of these worthies.

Among the Watch and Clock Companies.

—Between $140,000 and $150,000 in wages were paid to the Elgin factory operatives for April work.

—The new model 16-size movement of the Hampden Company will shortly be upon the market.

—The Otay factory has been running night and day, and completed watches are on the market.

—The United States Watch Company have withdrawn from the Watch Manufacturers' Association.

—It is said that the Rockford Company have already avowed their intention to exhibit at the world's fair.

—Prof. Everett, of Chicago, has charge of the new gymnasium just built in connection with the Elgin factory.

—The Illinois Watch Company report larger total sales so far this year than for the corresponding period of last year.

—The vacation of the United States Watch factory will occur during that of the American company, and last ten days.

—Master Watchmaker Church of the Waltham factory has returned home from Bermuda, his health being quite restored.

—Albert H. Potter, of Geneva, Switzerland, has assigned to the Trenton Watch Co., an improvement in stem-winding watches just patented,

—Report says that a company that have control of a new self-winding watch are negotiating with the Peoria Watch Company for its manufacture.

—It is proposed to hold a reunion of the employees of the American Waltham Watch Company who worked in that establishment thirty years ago.

—The pay-roll of the Otay Watch factory contains about 75 names. The machine department, plate room, gilding room, train room, jeweling and motion rooms, escapement room and flat steel department are in full blast.

—Arthur B. Hotchkiss, the well-known horologist and inventor of the Cheshire watch, is creating quite a stir by his latest invention, which is a bicycle railroad. One of these roads is to be built to run in from Mt. Holly, N. J., to Smithville, same state.

—Isaac W. Holmes, one of the best-known watchmakers in the East, died on May 18. He was at one time with the Tremont Watch Company, of Boston, and when that concern went out of business he was engaged by the Hampden Watch Company, then in Springfield, Mass.

—The Dueber Watch Case factory, at Canton, was closed the evening before Decoration Day, and the employees were given a complimentary excursion to Cleveland, Ohio, where they witnessed the dedication of the Garfield monument. John C. Dueber chartered a special train to accommodate them.

—A watch and watch case factory is to be established at Roanoke, Va., by capitalists from Illinois, who, it is stated, have agreed to invest in the enterprise $400,000. The daily output of the factory will be 150 watches and cases. The realization of the enterprise depends upon a condition that local capital to the amount of $100,000 be added to the first-named amount.

—The Columbus factory is so busy fhat the employees may be compelled to forego their vacation this year.

—The Elgin Watch Company are about to erect a large plant at Elgin to be used for the manufacture of all kinds of watch cases. The addition will be 200 feet long and three stories high, and will front on the banks of the Fox river. It is the intention of the officers of the works to manufacture not less than 2,000 watch cases per day as soon as in active operation.

—The new dial-laying machine in the Elgin factory has been put to a test, and accomplishes all that was expected. It will lay 7,000 dials an hour, and with it one girl can do the work of twenty-five men. Indeed 200 or 300 dials used to be the day's stint for a man. By the process for the under surface 6,000 dials can be enameled an hour. The process is protected by patent.

—A circular issued last month to the trade by the Columbus Watch Company stated that their sales for 1889 were greatly in excess of the previous year; and only limited by lack of capacity to make more goods. They promise to add during this year some novel and attractive movements. The company are sending out to the retail trade a card-board pendant set gauge, by use of which trouble in fitting pendant movements in cases can be obviated.

—The Otay Watch Co. have made arrangements with Penniman & Duke, of San Francisco, Cal., for the disposal of their entire product for the next five years. The finest movements were placed in the market on May 1. The factory has been running night and day. The town of Otay has increased 700 per cent. during one year, and the first watches are named Frank A. Kimball, R. D. Perry, and P. H. Wheeler. The company have secured all their exports for five years.

—Shellenberger's proposition to build a watch factory at Dubuque, if given $100,000 in cash and eighty acres of land, was recommended by him on the ground that subscribers to the subsidy would get their money back by buying 120 acres adjoining the 80 acres and selling it at the increased value the watch factory would give it. Local capitalists considered this matter, and basing their action upon Mr. Shellenberger's idea that the 120 acres of land will be worth as much as the $100,000 in cash, decided to offer him 200 acres of land and no cash. Whether Mr. Shellenberger will accept is not known.

—A new plan for retaining the Aurora watch factory plant in operation is about to be completed by the Trask farm syndicate, and the outlook is very cheerful. Proper buildings will be erected on what is known as the Trask farm, and the remaining ground will be plotted into city lots to be sold at $200 each, each purchaser of a lot to be given $200 worth of stock in the new factory. The present factory buildings will probably be given as a bonus for some large manufactory. There is hardly a watch factory now in successful operation that has not suffered more financial storms than ours, and we are still sanguine. It must succeed with such men as these at the helm.—*Aurora Post.*

—The first Otay watch was set in motion at 12.30 P. M., May 17, chromatic time, and moved off like a thing of life, without a jar, as smooth and regular as the most reliable. The correctness and precision of this initial timepiece, is said, by the watchmakers, to be a most remarkable occurrence. Never before in the history of watch making were the first movements of a watch found to be so perfectly constructed, without the need of further adjustment, and the new "F. A. Kimball" watch is now in good running order, marking time for the skill and progress of the age. And all that is further required to complete the great work of home manufactory is a little patience, when soon the Otay watch will be found far and near, giving reputation to California and the bay region. The watch movements as they are made ready will be shipped to Peniman & Dake, 29 Sutter street, San Francisco, and the gradual increase of the product of the factory will be carried forward.—*Otay Press.*

—At the annual meeting of the Shreve, Crump & Low Co., Bryam Shreve was re-elected president, and the gentlemen who have filled the positions of vice-president, general manager and treasurer were continued in office. The only change was the addition to the board of directors of Asa W. Armington, who has been associated with the house for twenty-four years.



[From our Special Correspondent.]

Philadelphia, May 20, 1890.

The quietness which has prevailed in all parts of the country during the past month has also embraced Philadelphia in its generous folds, and as a consequence the parks and drives have been well patronized by jewelers on pleasant days. The main topic of discussion has been the failure of the Keystone Watch Club Co., and the Lancaster Watch Co. It is impossible at this writing to tell what the outcome of this entanglement will be. The Keystone Watch Club Co., if pressed for a settlement would probably be unable to pay more than twenty-five cents on the dollar, but if granted the extension they desire, they hope to pay one hundred cents. Assignee D. Ramsey Patterson of the Lancaster Watch Co., states that the company is entirely solvent, its total liabilites not exceeding $90,000 while the assets are estimated at $300,000 at least. An appraisement is now being made with the assistance of H. J. Cain, but the application by a number of small stockholders for the annulment of the charter and the numerous cross and counter suits in which the Company is directly or indirectly interested, render it difficult to speak of the future with any degree of accuracy. About $70,000 worth of finished movements are held as collateral by the two Lancaster banks, and nearly the same amount of unfinished movements are in the vaults at the factory. These goods will not be sacrificed, but will be disposed of eventually in the regular course of trade. The statements circulated to the effect that large quantities of Lancaster movements are in the hands of Philadelphia parties as security for loans, are denied by those who claim to be posted in the affairs of Atkinson Bros. At any rate the complexion of things is somewhat more hopeful than was at first supposed and given a little time and discretion on the part of those interested, a settlement satisfactory to all will doubtless be arrived at.

B. Frank Williams, of the firm of David F. Conover & Co., has purchased a handsome residence at Overbrook, a fashionable suburb on the Pennsylvania railroad, and moved thither permanently.

The National Watch Case Co., 715 Arch St., have been appointed commissioners or special purchasing agents for the National Association of Retail Jewelers, and have fitted up a show room adjoining their office, where samples of the goods of various manufacturers selected to make for the Association are displayed for the members to examine. These goods all bear the trade mark adopted by the Association and ordered stamped on all goods furnished them. The officers of the Association are greatly encouraged by the interest manifested by the trade, and look for a large accession of membership within the next thirty days. Several local organizations in different parts of the country have signified their desire to join forces with the National Association.

The National Optical Co., Cor. 11th and Mifflin Sts., are issuing a new price list of their goods to the jobbing trade.

M. Zineman, of M. Zineman & Bro., the optical dealers of South Ninth street, sails for Europe on the *Etruria*, June 21st, to be absent about three months. He will do the continent pretty thoroughly before he settles down to business again, and we wouldn't be surprised if he wore a pair of "Diamanta" specs on the tour.

Harvey Filley & Son, manufacturers of plated ware, 15 S. Thirteenth st., have a process of plating with aluminum, which they are introducing by means of branch offices in the larger cities.

"At your models again!" said the inventor's wife, irascibly; "when will you get through with that nonsense? Models, models, day in and day out. The house is full of 'em."

"There is one model I haven't in the house and that I wish I had."

"Why don't you make it?"

"There is no material at hand."

"What is it?"

"A model wife."—*Boston Courier.*



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THE JEWELERS' CIRCULAR
AND
HOROLOGICAL REVIEW.

OFFICIAL REPRESENTATIVE OF THE JEWELERS' LEAGUE, THE NEW YORK JEWELERS' BOARD OF TRADE, AND THE JEWELERS' SECURITY ALLIANCE.

It is also the Recognized Exponent of Trade Interests.

A MONTHLY JOURNAL DEVOTED TO THE INTERESTS OF WATCHMAKERS JEWELERS, SILVERSMITHS, ELECTRO-PLATE MANUFACTURERS, AND THOSE ENGAGED IN THE KINDRED BRANCHES OF ART INDUSTRY.

SUBSCRIPTION.—To all parts of the United States and Canada, **$2.00 per Annum,** Postage Paid. To all Foreign Countries, **$3.00 per Annum,** Prepaid.

☞ *All communications should be addressed to*

THE JEWELERS' CIRCULAR PUBLISHING CO.
189 BROADWAY, NEW YORK.
CHICAGO OFFICE, 125 STATE ST., Room 18.

☞ *Advertising rates made known on application.*

GOSSIP OF THE MONTH.

☞A full Index to Advertisements and a Table of Contents will be found on Page 5 of this issue.

Subscribers will do a favor by notifying us at once upon the non-receipt of any number of THE CIRCULAR. The mails will occasionally miscarry, but we will cheerfully make good Uncle Sam's little shortcomings by sending another copy to replace any missing one.

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AN OLD and valued subscriber, a country jeweler in a far distant land, addresses the CIRCULAR with the complaint that although it is of great service to him, horologically speaking, it contains less matter of interest to the jeweler, especially to one who lives in "lanes and by-ways, afar from cities and the tumult of men." The technical editor is forced to admit that his complaints are more or less based on truth. But then our correspondent should remember that the art of goldsmithing is as old as the human race, and very likely the formulas for the solders used in making the golden calf at the time when Moses was on Mount Sinai are still in use among our modern goldsmiths and jewelers. The art of horology, however, is a modern science, still in the course of development. It is true, the ancients used sun dials, etc., but then these were open to the objections which the negro down South urged against the moon: "It was good enough in its way, but then, it didn't shine on dark nights, when most wanted." Let our subscriber "compose his soul in peace;" the CIRCULAR will for some time to come devote a certain part of its space to goldsmithing and jewelry. We recently published an article on "coloring;" this month we commence the publication of an article on "Enamelling," which may run serially through three or four numbers. "Alloys" and "solders," will next engage our attention, and we will try to be just to all parties.

Right here, the technical editor is also forced to acknowledge that he is exceedingly hampered in his inquiries for novelties, formulas, recipes, etc., by the touch-me-not answer: "That's a shop secret!" "Shop secrets" flourished and throve during the time of the narrow-minded guilds and small tradesmen, but are entirely out of place in this, the end of the nineteenth century, when one startling innovation or discovery crowds its predecessor into oblivion, and no sooner made than forgotten and its place usurped by some other still more practicable invention. Consign "shop secrets" to the tomb, to be resurrected only when the world of Applied Science is again laid in the shackles and hampered and hedged in on all sides by the jealous, prejudiced guilds of the former centuries. The real benefactor of his race and generation is not he who guards a "shop secret" with a jealous eye, but he who boldly publishes it to the world and invites honorable competition on the same free and open basis. The chemist, the doctor, the inventor have no such secrets, but openly proclaim their discoveries and thus become promoters and benefactors of their time and generation. Let all follow this example.

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☞ *"Those Windows Again," page 38, will give you some very valuable hints to assist you in making your windows attractive.*

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THE annual exhibition of the work of the pupils of the New York Institute for Artist Artizans, 140 West 23d street, was held on the 31st of May, at the class rooms of the institute. The walls of the various rooms or departments were literally covered with specimens of the students' handiwork, which, for their conspicuous merit, drew forth expressions of admiration from all visitors to the rooms. The quality of the work was certainly superior to that shown at the last commencement, excellent as that was. Only words of praise were heard for the instructors, whose painstaking labors for the year had borne fruit of such rare and exceptional merit. A class in jewelry and silverware designing has been organized, and at the next session, which begins in October, the work of instruction will be resumed with the most complete facilities. Students from the institute are taking places as designers in shops and factories and testifying to the soundness of the principles they have imbibed by

gaining prizes in public competitions and exhibitions, as in the recent *Herald* contest. The courage and persistence with which the prime mover, John Ward Stimson, and his assistants, have battled for the cause of the artist-artizan, are at last winning from the public and the various guilds the recognition which their devotion deserves. The silk weavers are about to co-operate with a handsome endowment fund. The jewelry trade has already taken the initiative, but it is important that once having put their hand to the plough they should not turn back. The following are the names of the firms that have subscribed for the support of a department of jewelry and silverware designing: Tiffany & Co., Gorham Manufacturing Co, Whiting Manufacturing Co., Howard & Son, (of Providence); Carter, Sloan & Co; Roy Watch Case Co., Alvin Manufacturing Co., R. N. Peterson, Krementz & Co., Alling & Co., A. J. Hedges & Co., J. B. Bowden & Co. Others have signified their intention of joining the movement, and there is little doubt that by the next session of the institute a department for instruction in our trades will be in operation. Jewelers are invited to call at the institute, 140 West 23d street, at any time, and inspect the work of the students.

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"Excelsior" takes up some of those "Neglected Problems" again in this issue.

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SAID a prominent Eastern manufacturer to the Editor the other day, "I believe there never was a time in the history of the jewelry business when there was a better chance for a man to make money if he will only show something radically new in our line. The jobbing trade are tired of the monotonous old patterns they have seen for the past ten or twenty years, and are looking anxiously for novelties." There can be no doubt of the wisdom of this observation. It applies not only to the jewelry trade but to all the other art trades as well. In all the various lines our manufacturers and dealers are beginning to realize that there is a strong demand among the people for variety and beauty in their wares—a demand which the manufacturers admit they are unable to supply. It is something gained, however, if the art-workers, and the people, for whom they toil, do really recognize the existence of the eternal principles of fitness and beauty, even in things of utility, and the former set about incorporating those principles in their products. The desired end—the growth and elevation of popular taste—will thus be reached, though by slow stages and after much experimentation. But there is an immediate application of this truth, now so apparent to our more enterprising manufacturers, that should require little argument to make it clear to all, and that is, our urgent need of schools of design. We complain of the poverty of design and monotony of our art manufactures, and justly; but the remedy we are slow to perceive. We must give our bright and intelligent American boys and girls, who possess the requisite artistic sense, a chance to apply their talents for the practical improvement of our trades. That our young people do many of them possess the necessary gifts in high degree, is being abundantly proven, even by the few opportunities for training that are now offered in this country, such as the Institute for Artist-Artizans, recently started in New York. Provide schools for the instruction of native designers and the cry of the people for beauty and novelty will soon be satisfied, but it never will be until we do.

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If you have a puzzling case in optics write to DR. BUCKLIN *and he will answer in his department.*

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THE American Trade Press Association was formed at the office of the *Upholsterer*, 1326 Chestnut street, Philadelphia, on June 17th. The following papers were represented: *Druggist's Circular*, *American Exporter*, *Light, Heat and Power*; JEWELERS' CIRCULAR, *Builder and Decorator*, *Paper and Press*, *Confectioners' Journal*, *Boot and Shoe Recorder*, *The Haberdasher*, *The Clothing Gazette*, and *The Upholsterer*. Letters were received from nearly a dozen publishers of other leading trade papers endorsing the movement. A constitution was then submitted for debate and after some deliberation, passed. F. B. DeBerard, Jno. Cochrane and Benj. Lillard were elected Directors; C. R. Clifford, treasurer; Geo. W. Graeff, Jr., President; and I. B. Scott, Secretary. The purposes of the organization are to secure to the members the benefits of co-operation in the various lines of effort in which these journals are engaged. The first annual meeting of the Association will probably be held early in August, when the constitution will be finally ratified and the details of organization definitely settled.

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See our offer to new subscribers. Page 49.

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ALL firms sending out travelers are aware of the burdensome character of the above expenses, and must be interested in any hopeful effort to reduce them. Such an effort is now making and only needs united action to become successful. A universal mileage ticket, sold at a price much below the usual ticket rates, and good on many or all roads in the country has been proposed, and official representatives of several leading roads have endorsed it. A 5,000 mile ticket at $100, has long been sold by one road, and is good on thirty others. This idea is sought to be extended. Many roads will not grant such a privilege to the general public, but are willing to do it for the benefit of commercial travelers, since they recognize the latter as steady patrons, both personally and as freight forwarders. This discrimination is prohibited, however, by the Inter-State Commerce law, and the only way to secure it is through the modification of that law in this respect. Several proposed amendments to that end are now before Congress. Notable among these is that introduced by Mr. Hansbrough, and now in the Committee on Commerce, reading as follows:

"Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

That at the end of section twenty-two of an act entitled, "An Act to regulate commerce," approved February 4th, 1887, and amended March 2d, 1889, the following proviso be inserted:

Provided, That nothing in this act shall be construed to prohibit any common carrier from giving reduced rates of transportation and a permit to carry a weight of sample baggage in excess of the amount allowed the ordinary traveler, to commercial travelers, whether employer or employe, who travel to sell merchandise for a wholesale business, taking orders from dealers for goods for subsequent delivery; and also to members of the theatrical profession."

The chairman of the Committee, Mr Chas. S. Baker of New York, and several of his associates have expressed themselves in favor of the measure and are hopeful of its passage, but urge the vital importance of prompt and emphatic requests therefor from the mercantile community, since Congress is not likely to act without some such expression of the popular desire. The Clothing Manufacturers' Associations in this and other cities are now circulating copies of the petition given below, and the same will be done in the hat and men's furnishing trades. It is important that the manufacturers, jobbers and all others employing travelers in every line of business in the country should unite in this movement, and interest themselves by influencing members of Congress or sending letters to the chairman of the Committee on Commerce. Let the jewelry trade join the chorus of appeal.

OUR TRADE ORGANIZATIONS

THE JEWELERS' LEAGUE.

AT THE regular monthly meeting of the Executive Committee of the Jewelers' League held on Friday evening, June 6th, at the League office, there were present Chairman Geo. Howe and Messrs. Wm. Bardel, Geo. H. Houghton, Wm. L. Sexton and the General Agent of the League, Frank J. Jones. There were seven requests for change of beneficiary received and granted, one application for membership was referred for investigation, and the following thirty-six applicants were admitted to membership :

Edward H. Ackley, Brooklyn, N. Y., proposed by C. J. Leonard and N. E Whiteside ; Frank I. Barden, No. Attleboro, Mass., proposed by E. I. Franklin ; Walter E. Barden, North Attleboro, Mass., proposed by C. Fisher ; David P. Barry, N. Y. City, proposed by W. C. Parks ; Otto G. Berner, Le Mars, Ia., proposed by W. H. Beck ; L. A. Blackington, Attleboro, Mass., proposed by C. Dobra ; F. W. Bliss, Attleboro, Mass., proposed by S. O. Bigney ; W. J. Braitsch, Providence, R. I., proposed by F. I. Marcy ; John Brobst, Dallas, Texas, proposed by Chas. Sorg; A. S. Burlingame, Attleboro, Mass., proposed by E. C. Glines; D. E. Codding, No. Attleboro, Mass., proposed by O. H. Atwood; H. C. Crane, Providence, R. I., proposed by H. Meyerheim; A. S. Cumerford, Providence, R. I., proposed by Chas. P. Gay; O. G. Fessenden, N. Y. City, proposed by C. W. Bingman and F. Bigley; W. H. Franklin, No. Attleboro, Mass., proposed by G. L. Paine; Henry Harris, Hartford, Conn., proposed by W. H. Tarlton; John B. Kennessy, Providence, R. I., proposed by L. Schmitt ; Samuel G. Hobbs, Philadelphia, Pa., proposed by H. K. Mitchell ; B. B. Lederer, Providence, R. I., proposed by J. J. Fogerty; H. A. Lincoln, Providence, R. I., proposed by A. C. Stone; Geo. W. Long, Philadelphia, Pa., proposed by J. F. Thomas; Julius Maltby, Wallingford, Conn., proposed by G B. Munson; F. Martens, Philadelphia, Pa., proposed by A. J. Willemin; W. J. Mason, Providence, R. I., proposed by C. C. Wientige; M. R. Minnich, Philadelphia, Pa., proposed by B. H. Lyon; J. B. Morse, Providence, R. I., proposed by H. F. Payton; E. E. Norris, Boston, Mass., proposed by G. H. Richards, Jr.; H. G. Possner, Providence, R. I., proposed by J. E. Schott; C. H. Schott, Brooklyn, N. Y., proposed by B. C. Hadley; B. R. Smith, Providence, R. I., proposed by J. B. Woolsey; W. J. Smith, Providence, R. I., proposed by Wm. Smith; Chas. H. Solomon, Macon, Ga., proposed by H. C. Lesquereux; W. H. Speck, Palatka, Fla., proposed by J. M. Thomas and S. Thomas Jr.; R. E. Sturdy, Providence, R. I. proposed by C. H. Downs; Geo. A. Taylor, Attleboro, Mass., proposed by G. K. Webster; J. E. Weindl, New Orleans, La,, proposed by C. Fischer,

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THE JEWELERS' AND TRADESMENS' COMPANY.

THE elections to membership during the past month are of the following named: Henry W. Bierma, E. Menker & Son, George Grawitz, L. Schwartz & Co., Albert B. King, B. H. King & Son, William H. Slacer, M. D., George A. Lee and Philo J. Martin, of Lee, Martin & Co., Samuel V. Dickinson, of Buffalo, N. Y.; Albert E. Lyke, Emanuel Lindner, Henry T. Williams, M. D., of Rochester, N. Y.; Edgar W. Haven, Jos. Seymour Sons & Co., E. Oliver Kinne, M. D., of Syracuse, N. Y.; Edwin Netherwood, Chapman & Co., Holyoke, Mass.; Louis E. Steinman, Hargis & Co., Chicago, Ill.; and the following of New York City : Andrew E. Mabie, United States Express Co., Alfred Poindexter, John H. Thompson.

Co partnership insurance is an excellent feature which is being presented to the jewelry trade by the Jewelers' and Tradesmans' Company. It is a wise forethought, which prompts business partners to insure, each for the other's benefit. The assessments being paid by the firm. A few thousand dollars is a valuable auxiliary to continuing business by a surving partner, in the event of the death of either, and the amount is available so promptly after the death of one of a firm, that its utility becomes at once apparent to thoughtful men. It is a very substantial addition of several thousand dollars of capital to that of the survivor, with which to continue business. None who have lost their partners by death, appreciate the value or the lack of such forethought (converted into dollars and cents) so much as those respectively, who have or have not thus insured for each other's benefit.

Forethought is a requisite in such matters ; it is of absolute monetary value. The regret that this has not been done is but profitless pondering. Regrets will not assist to cancel obligations to the estate of a deceased partner.

The Hon. Stewart L. Woodford has said "I have seen over and over again where life insurance liberally provided by a man of business, has furnished the money that has enabled the administrators or executors to save the business that was in doubt, to put it on its feet, and save the property that has been invested."

THE JEWELERS' SECURITY ALLIANCE.

The regular monthly meeting of the Executive Committee was held at the Alliance office on June 10th. There were present, President David C. Dodd Jr., Vice-President A. K. Sloan, J. B. Bowden, Chairman, Chas. G. Lewis, Treas., Messrs. White, Butts and Geo. H. Hodenpyl, Secretary.

The following applicants were admitted to membership : F. M. Roberts & Co., Winston, N. C.; John M. Hubbard & Bro., Anderson, S. C ; The Finch Jewelry Co., 155 E. 3d St. St. Paul, Minn ; Barber & Burlingame, Attleboro, Mass.; Henry Cowan, 409 Washington St. Boston, Mass.

NOTES.

A meeting of the Jewelers' Building and Loan Association was held on Monday evening June 9. Subscriptions were received and several names were proposed for membership. The association meets on the second Monday of each month.

Henry Ginnel & Co., Paul A. Jeanneret & Co , New York, and H. O. Hurlburt & Sons, Philadelphia, Pa., have been admitted to membership to the New York Jewelers Board of Trade. Leon Hirsch and the Manhattan Watch Co., are on the list of applicants.

The first meeting of the Missouri Retail Jewelers' Association was held Wednesday evening, June 4, at 620 Locust street, St. Louis. The following officers were elected : President, Herman J. Oberschelp; vice-president, J. Ryser; secretary, J. F. Schmitt; treasurer, F. H. Nichaus ; board of directors, F. W. Bierbaum, William Henckler John Schmid, Henry Mauch and Charles Osterhorn. Communications from the Ohio Retail Jewelers' Association and the National Retail Jewelers' Association, expressing the regret at the inability of their officers to attend the session and wishing the Missouri Association success, were received and read. It was voted at once to make a vigorous canvas of the State for the purpose of increasing the membership.



Proceedings of the Watchmakers' and Jewelers' Union.

[NOTICE.—We shall be pleased to receive and discuss descriptions of new tools, attachments and improvements in any branch of our trade, and publish them free of charge; also inquiries for those desiring information on any point of general interest. Communications should be written as concisely as possible consistently with clearness, on only one side of the paper, and be received here by the 10th day of the month, in order to be discussed at our meeting for that month and inserted in the next issue of THE CIRCULAR. Address them to "Secretary of the W. & J. U., care of THE JEWELERS' CIRCULAR, 189 Broadway, New York." For full information for correspondents, see our Proceedings in THE CIRCULAR for October, 1889.]

Ninth Meeting.—Reported by the Secretary.

The monthly meeting of the Watchmakers' and Jewelers' Association, which occurred on the 19th of June, was well attended, considering the inclemency of the weather, and a good deal of interest was manifested in the discussions. The secretary presented the usual batch of communications and inquiries, the first being on the following subject:

TO PREVENT SCREWS BREAKING.

Cedar Rapids, Iowa, June 12, 1890.

Secretary of the W. & J. U.:

I have been troubled very much of late when making screws by the breaking of the threaded part in the screw plate, without any apparent reason. What can I do to avoid this? A.

MR. UHRMACHER rose to answer. He said the first necessity for making screws in an ordinary screw plate is good steel, steel that is soft and close grained, or tough. Without such, success is almost impossible. Even with such it is quite a knack to make a nice screw, and beginners are generally apt to use too much force when cutting the threads. If the spindle has been turned too large for the hole in the screw plate there is danger of breaking the screw plate, which is necessarily very hard, and pieces will chip off Again, the piece to be tapped is apt to break and stop up the hole in the plate, thereby entailing the tedious job of drilling the piece out and cleaning the thread.

MR REPAIRER remarked that a good way was to cut a thread in a hole too large, and then turn down the steel gradually to the proper size. It is natural that a certain force must be employed, but the liberal use of oil and careful practice will soon enable any one of ordinary mechanical ability to make a successful job. Screws with threads above a certain diameter should never be made in an ordinary screw plate, and the appliances used in our watch factories might easily be introduced by our material dealers, and used by such watchmakers as are provided with an American lathe. In fact, he said, a good many appliances used in connection with an American lathe should be introduced among watch repairers. He thought Horological schools would surely bring this about.

The second correspondent wished to know

WHAT ARE QUARTER SCREWS?

ST LOUIS, MO., June 5th, 1890.

Secretary of the W. & J. U.:

May I ask the question, "what is the use of quarter screws in watches generally, but more particularly in watches with going barrels?"

Yours truly, J. F.

The encyclopædia, MR. EXAMINER, was requested to give the desired information. He said quarter screws in watches with going barrels were, and are yet used in this country for the purpose of timing, *i. e.* bringing a watch to time when the balance spring was not exactly of the right strength. A considerable variation in time may be corrected by these quarter screws; and in this way quarter screws were of some service to the timer. Aside from this, quarter screws in a balance give to a watch the appearance (appreciated by the uninitiated) as though the watch had been adjusted to position.

MR. O'PINION said by way of supplement that in English or fusee watches quarter screws are used for a double purpose.

First, in watches where no regulator is used. To make watches without a regulator is a pet idea of some of the English watchmakers; and while it must be admitted that adjusted watches are better without than with a regulator, the absence of a regulator compels the owner of a watch to apply to a watchmaker to have the timing screws touched if the watch is to be corrected for any variation.

Second, in watches where the chronometer escapement is used. Allowing that the balance and the balance-spring are in poise, the unlocking of the escapement, as well as the impulse, give rise to side friction of the balance pivots, more so in the chronometer escapement than in the lever escapement, the latter imparting a double impulse to the balance (going and coming), while in the chronometer escapement the balance receives an impulse in one direction only. The effect of this single impulse is to produce a position error, which can only be corrected by the balance being thrown slightly out of poise by means of one of the timing screws. This can be done more effectually if the balance describes exactly one revolution (going and coming combined) in the hanging position. Any deviation from this will immediately change the effect; an increase in the vibration of the balance beyond one revolution would have a tendency to neutralize the effect of the balance being out of poise; a decrease would have a tendency to augment the effect on a position error. From this it will be seen that timing screws in a watch with a going barrel, where the balance is thrown out of poise by one of them, might do great mischief, as the vibrations vary during the entire day from one hour to the other, and timing screws for correcting position errors can only be used to advantage where the vibration of the balance can be kept in a normal state all the time.

The chairman complimented Mr. O'Pinion on the thoroughness of his exposition of the subject, and then requested the secretary to proceed with the next letter, which touched upon a problem in

CHANGING THE TRAIN OF A WATCH.

ALBANY, N. Y., June 5, 1890.

Secretary of the W. & J. U.:

I have changed the train of a watch from a 16,200 beat train to a 18,000 beat train. To make the vibration of the balance harmonize with the change, I will have to tighten the balance or put a stronger balance spring on the balance. Which is the proper way to proceed? J. S. V.

MR. EXPERT thought the balance ought to be tightened, and the spring to remain as it is. In explanation he said in designing and laying out the plan for a new watch, we have to determine a relative proportion between the motive power (the main-spring) and the balance-spring—as the energy of the first has to overcome the resistance of the second. This is a *sine qua non*. The momentum of the balance is an auxiliary only. The latter ought to be taken into consideration, but in a job of the kind our correspondent has in hand, the changing of the weight of the balance alone would probably produce a vibration equal in extent to that which existed before the train was changed.

The Secretary then read the following letter:

TO REMOVE A BROKEN SCREW FROM A WATCH PLATE.

Terre Haute, Ind., June 1, 1890.

Secretary of the W. & J. U.:

Can you give any information how I may remove a broken screw from a watch plate bed by chemical means. I have failed several times to do so by ordinary means *i. e.* by pliers, etc, and I have been compelled several times to resort to the punch. Yours truly, F. L.

Mr. REPAIRER rose in response to the chairman's invitation, and

said that he had often found the following method : Mix four parts of distilled water with one part of sulphuric acid and put the plate in the solution over night, when the acid will generally eat away sufficient from the thread of the screw, to cause a distinct separation between the steel and the brass, and the screw may be removed easily by mechanical means.

TO CEMENT METAL TO MARBLE.

Dover, N. H., June 17, 1890.

Secretary of the W. & J. U.:

I have a marble clock, and I wish to fasten a metal plate to it. I have not been able to do it. Can you recommend any cement that will do it ?

Yours truly, H. B. K.

MR. REPAIRER being familiar with recipes, he was called on to reply. He said he knew of no cement that will accomplish what you wish to. But an effective way to fasten the metal plate on the marble is by gluing a piece of paper on the metal, and after it is thoroughly dry, applying a coat of glue to the paper, and fastening it to the marble.

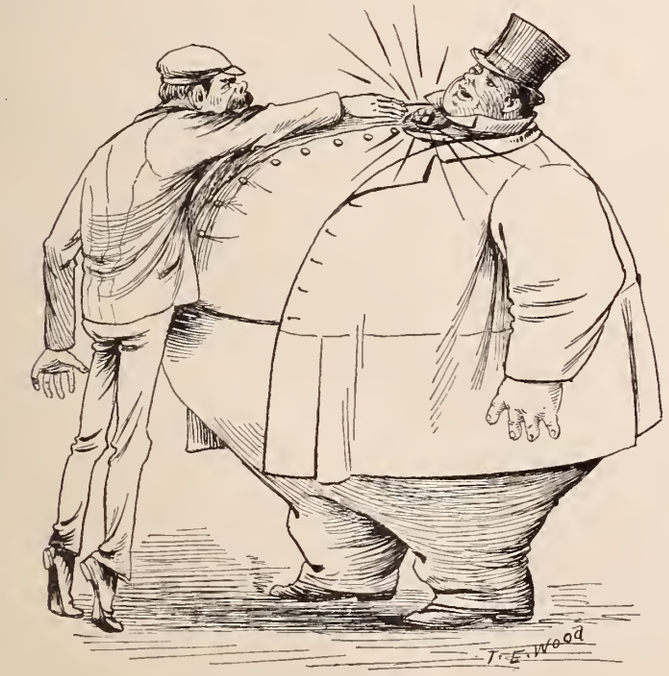
A POINT IN ETHICS.

Ravenswood, W. Va., June 14, 1890.

Secretary of the W. & J. U. :

Is it dishonest or unlawful to buy watch movements which are not adjusted, and after adjusting them myself, to mark them adjusted. Yours truly, C. K.

MR. EXAMINER said that if he remembered rightly, a case occurred some years ago where a dealer had bought a "Howard" movement, and had it marked "adjusted." The watch company heard of the case, and after investigation, found that the movement had not been adjusted by the company. The company sold watches adjusted, and a lower-priced movement, apparently of the same grade, not adjusted. The movement referred to was one of the latter, and by engraving it "*adjusted*" it certainly might be inferred that it was one of the better grade movement. The marking of a movement "*adjusted*" under such circumstances ought to be, and, no doubt is, unlawful. But in a case where a movement is adjusted by any watchmaker after purchasing it, such a movement may be marked simply "adjusted," if this can be done without prejudice to the interest of the manufacturer, or by adding the name of the adjuster, and marking it "adjusted by N.N.," or whatever the name of the adjuster may be The latter course or proceeding will surely avoid all possible trouble.



The secretary then as at the previous meeting read several communications from members of the trade, all expressing pleasure at the introduction for discussion into the association of the subject of advertising novelties. Among the sketches handed in by Mr. Stilus, was the one reproduced here, which may serve for advertising a patent safety catch. Caption lines such as "a patent safety catch," "adipose tissue, or a safety catch," and the like, were suggested by different members.



The following list of patents is compiled from the records of the United States Patent Office, and specially reported to THE JEWELERS' CIRCULAR.

Issue of May 27, 1890.

DESIGN PATENT NO. 19,851.—SPOON, &C.—HENRY A. PISTORIUS, NEWBURYPORT, Mass., assignor to The Towle Manufacturing Company, same place. Application filed April 16, 1890. Serial No. 348,232. Term of patent 7 years.

DESIGN PATENT NO. 19,853.—HANDLE FOR CANES, UMBRELLAS, &C.—CHARLES L. Dreher, Lancaster, Pa. Application filed April 19, 1890. Serial No. 348,748. Term of patent 3½ years.

DESIGN PATENT NO. 19,859.—HANDLE FOR CANES, UMBRELLAS, &C.—CHARLES L. Dreher, Lancaster, Pa. Application filed April 16, 1890. Serial No. 348,236. Term of patent 3½ years.

DESIGN PATENT NO. 19,862.—SOCIETY-EMBLEM.—MONTFORT STOKES JONES, Shreveport, La., assignor of one-half to Samuel N. Ford, trustee, same place. Application filed February 27, 1890. Serial No. 342,016. Term of patent 14 years.

428,588 —TIME-PIECE DIAL. WALTER W. BARRETT, PORTLAND, ME. FILED April 16, 1889. Serial No. 307,465. (No model.) In a time-piece, a fixed disk having an inner circle graduated into degrees of longitude and an outer circle graduated into minutes of longitude, a movable dial divided into hours of time, and a second moving dial concentric with the hour-dial and divided into minutes of time and adapted to be moved twelve times as fast as the hour-dial, an hour-hand for indicating the hours of the day and the degrees of longitude, and a minute hand for indicating the minutes of time and the minutes of longitude.

428,676.—ELECTRIC-CIRCUIT CLOSER FOR CLOCKS.—HENRY C. KARR, WASHINGTON, D. C. Filed Feb. 14, 1889. Serial No. 299,839. (No model.)

428,717.—STOP-CLOCK.—JOHN H. DATES, PHILADELPHIA, PA. FILED JAN. 25, 1890. Serial No. 338,142. (No model.)

428,727.—METHOD OF PLATING ON SOLID WIRE.—SAMUEL F. MERRITT, Springfield, Mass. Filed Jan. 7, 1890. Serial No. 336,192. (No model.) This process of plating a rod consists of flowing solder about the same between the tube and rod, closing the joint, and attenuating the consolidated tube and rod.

428,770.—ENGRAVING MACHINE.—CHARLES H. FIELD, JR. PROVIDENCE, R. I. Filed Feb. 6, 1890. Serial No. 339,458. (No model.)

428,834.—METHOD OF WELDING ALUMINUM.—MICHAEL EMME, ATLANTA, GA. Filed January 14, 1890. Serial No. 336,428. (No specimens.) *Claim.*—This process of uniting together pieces of aluminum, consists in first removing the oxide from the contacting surface of the pieces by chemical action under heat, and at the same time softening the contacting part by the heat, then mechanically puncturing and displacing the molten metal at the joint, so that it will flow from one side to the other and form a union.

428,854.—ELECTRIC PROGRAMME-CLOCK.—JOHN L. MCCASKEY, WAYNESBOROUGH, Pa. Filed July 26, 1889. Serial No. 318,735. (No model.)

428,961.—METHOD OF MAKING DIES.—JOHN SCOTT, TAUNTON, MASS. FILED Dec. 23, 1889. Serial No. 334,688. (No model.)

429,033.—WATCH-DEMAGNETIZER.—FERDINAND F. IDE, PEORIA, ILL. FILED Jan. 30, 1890. Serial No. 338,620. (No model.)

429,039.—BRACELET.—ANDREAS KIENLE, NEWARK, N. J., ASSIGNOR TO BIPPART & CO. Filed Mar. 19, 1890. Serial No. 344,466. (No model.) This improved bracelet, combines a wire with overlapping ends and a series of recesses formed in the body and a recess formed at the end thereof, and a teat or lug arranged on the end of the bracelet opposite the one having the recess.

429,089.—SEPARABLE STUD.—GEORGE ESSER, PROVIDENCE, R. I. ASSIGNOR to Pembroke S. Eddy, same place. Filed Jan. 31, 1890. Serial No. 338,777. (No model.) In a separable stud, the combination with the head and post provided with a catch groove of a cup provided with opposite perforations to receive the pushers, a pusher-guiding-plate provided with raised portions and opening pushers, provided with a head, a shoulder, a catch, a spring, and arranged with each other so that the spring of one pusher will rest against the opposite pusher, and the covering plate provided with a hollow post.

Issue of June 3, 1890.

DESIGN PATENT NO. 19,865,—ORNAMENTATION OF GLASSWARE.—THOMAS G. Hawkes, Corning, N. Y Application filed May 5, 1890. Serial No. 350,700. Term of patent 14 years.

DESIGN PATENTS NOS. 19 868 to 19,870, inclusive.—CLOCK CASE.—FRANK E. Morgan, New Haven, Conn., assignor to the New Haven Clock Company, same place. Application filed October 4, 1889. Serial Nos. 327,017 to 327,019, inclusive. Term of patents 7 years.

TRADE MARK PATENT NO. 17,987.—UMBRELLA AND CANE HEADS, THIMBLES, Cups, Tableware and Napkin-Rings Simons, Bro & Co., Philadelphia, Pa. Application filed Februaiy 20, 1890. Used since 1880. "The letter 'S' carried upon a shield."

429,132 —STOP CLOCK.—ROBERT M. JOHNSON, SIGOURNEY,, IOWA FILED May 29, 1889. Serial No. 312,588. (No model.) The combination, with a frame, of a hollow rotative shaft, having bearings in it, a central shaft which is movable lengthwise and extends through the hollow shaft, a disk provided with a soft or preamble surface and secured to the hollow shaft, and a cylinder secured to the central shaft and provided with points which are in position to be connected with or disconnected from the disk by longitudinal movement of the central shaft.

429,174.—WIRE-LINK CABLE.—GEORGE H. OGILVY, NEW YORK, N. Y. FILED Jan. 10, 1890. Serial No. 336,572. (No model.) The combination, with the link formed of coiled wire doubled on itself and passing through the ends of adjacent links, of shields or grommets within the eyes of the link, and a wire-serving wound spirally around all the strands of the link.

429,276.—DIAMOND-WASHER.—LOUIS W. LEVY, NEW YORK, N. Y. FILED Aug. 23, 1889. Serial No. 321,757. (No model.) A jewelry or diamond washer consisting of a circular weil having a flat upper edge and a circular sieve having its rim provided with spurs diametrically opposite each other to rest on the edge of the well, thereby forming pivotal supports for the sieve.

429,280 —APPARATUS FOR ENGRAVING.—JOSEPH L. MILLS, BALDWIN'S GARDENS, Gray's Inn Road, County of Middlesex, England. Filed Jan 3, 1889. Serial No. 295,360. (No model.) Patented in England, July 16, 1888, No. 10,295 ; in France Jan, 16, 1889, No. 195 416 and in Belgium Jan. 18, 1889, No. 84,670.

429,360.—WATCHMAN'S TIME-RECORDER.—JAMES F. MCLAUGHLIN, PHILADELPAIA, Pa. Filed March 13, 1890. Serial No 343 591. (No model.)

429,396 —ELECTRICAL CLOCK-WINDING MECHANISM.—CHARLES A. WARD, Waterbury, Conn. Filed Aug. 26, 1889. Serial No. 322,040. (No model.)

429,455.—CLOCK STRIKING MECHANISM.—GEORGE T. KEIL, WASHINGTON, D. C. Filed Sept. 4, 1889. Serial No. 322,953. (No model.)

429,552.—ADVERTISING CLOCK.—CHARLES A. WARD, WATERBURY, CONN., Filed Nov. 25. 1889. Serial No. 331,504. (No model.)

Issue of June 10, 1890.

DESIGN PATENT NO. 19,894.—MATCH-BOX.—HARRY P. FAIRCHILD, NEW York, N. Y. Application filed May 15, 1890. Serial No. 351,976. Term of patent 3½ years.

DESIGN PATENT NO. 19 900—CANE OR UMBRELLA HANDLE.—ANDREW KROUSE. Bridgeport, Conn. Application filed April 24, 1890. Serial No. 349 378. Term of patent 7 years.

TRADE MARK PATENT NO. 18,025.—JEWELRY, WATCHES, SILVER AND PLATED Ware, Bronzes and Opera Glasses.—C. W. Schumann & Sons, New York, N. Y. Application filed April 15, 1890. Used since April 10, 1890.

"The representation of the figure of a man clad in shepherd's garb in the act of running and holding aloft an apple, which figure represents the mythical Paris."

429,699 —APPARATUS FOR TESTING WATCH-BALANCES.—WILLIAM D. OLNEY, Waltham, Mass. Filed Dec. 3, 1889. Serial No 332,484. (No model.)

429,805.—STEM WINDINGAND SETTING WATCH.—LOUIS BURRI-HALDI, BIENNE, Switzerland. Filed Nov. 11, 1889. Serial No. 329,843. (No model)

429,978.—CHAIN.—PHILIP THOMAS AND LEONARD S. BEALS, LONG ISLAND, City, N. Y. Filed Nov. 7, 1889. Serial No. 329,476. (No model.) A chain composed of a series of links composed of corresponding halves or sections, and pivotally engaged with each other at their adjoining ends and each link having perforations at the pivotal joints, and a pair of approximately parallel flexible connections extending through the perforations at the pivotal joints.

430,099.—STEM WINDING AND SETTING MECHANISM.—CHAS. V. WOERD, Waltham Mass.; Daniel O'Hara, administrator of said Charles V. Woerd, deceased. Filed Feb. 13, 1888. Serial No. 263,888. (No model.)

Claim.—In a stem-winding and hand-setting mechanism comprising a train of gearing connecting the winding-stem with both the hand and mainspring arbors and in part carried by a swinging yoke and arranged normally to be in connection with the mainspring arbor and out of connection with the hand-arbor and to be placed out of connection with mainspring-arbor and into connection with hand-arbor by suitably swinging the yoke therfor, the combination, with the arbor of one wheel of the train, and which arbor is round of an enlongated bearing therfor located on the yoke, and in width equal or substantially equal, and in length greater than the diameter of the arbor and located for the arbor to be free to move along its length in one direction toward and in the other direction away from and thus to place its gear-wheel into and out of connection with the mainspring-arbor, and a spring suitably held and arranged to press the gear-wheel in a direction toward the end of the slotted bearing for its arbor.

Issue of June 17, 1890.

DESIGN PATENT NO. 19,910—MATCH-BOX.—HARRY P. FAIRCHILD, NEW YORK, N. Y. Application filed May 15, 1890. Serial No. 351,975. Term of patent 3½ years.

430,196.—PLUMBER'S OR JEWELER'S FURNACE —BENNARD REIN, DETROIT, AND Asa W. Straight, Ypsilanti, Mich. Filed Sept. 20, 1888. Serial No. 285,945. (No model.) A reservoir having an air-inlet tube and an oil-tube leading from near its bottom, in combination with the burner flexibly mounted on the oil-tube, and the detachable support (the hood) for soldering iron or other articles, located above the burner.

430,204.—DRESSING-TOOL FOR EMERY-WHEELS AND GRIND-STONES. THOMAS Wrigley, Oak Park, Ill., Filed Sept. 25, 1889. Serial No. 325,094. (No model.)

430,295—BRACELET. JAMES R. MATHEWSON. Wrentham, Mass., assignor to William H. Wade and Edward P. Davis, both of same place. Filed Jan. 16, 1890 Serial No. 337,124. (No model.) In a bracelet the combination of a flat spring for supporting balls forming the links, and balls or shells, substantially round in cross-section, provided with a row or line of ornamentation on their outer sides, and with rectangular holes in their sides corresponding substantially with the shape of the spring, whereby they are strung on the spring and prevented from rotating thereon.

430 299—CENTERING TOOL. JULIAN R. RAND, BRATTLEBOROUGH, VT., Filed March 13, 1890. Serial No. 343,732. (No model.) This centering tool, compris s the tool proper, consisting of a shank, an annular thickening and an operative portion, a tubular body provided with a shoulder, a spring, a perforated cap, said tool proper being free to reciprocate vertically and rotate in said tubular body.

430,305—GOLD SAVING DEVICE. CHARLES TRAFTON, YANKEE JIM'S, CAL. Filed March 3, 1890. Serial No. 342,452. (No model.)

430 424—PROCESS OF APPLYING LINES AND CHARACTERS TO WATCH DIALS. William S. Eaton, Sag Harbor, N. Y. Filed Jan. 28, 1890. Serial No. 338,402. (No specimens.) This method consists in applying to the dial which is to receive the lines or characters a film or coating, marking or engraving through the film to the surface of the dial, applying to the exposed surface a coloring matter which has an inverse affinity from that of the film, to a solvent for the film, applying to the dial a solvent and removing the film, and finally fixing the lines or characters permanently.

430,542—ENGRAVING MACHINE. JAMES C. PARMERLEE, SEDALIA, MO. Filed Sept 11, 1889. Serial No. 323,590. (No model.)

430,591—OPTOMETER. DANIEL R. PRUDEN, CHELSEA, Mass., assignor to Daniel W. Wormwood, same place. Filed Sept. 16, 1889 Serial No. 324,147. (No model.) In an optometer, a suitable enclosing frame, having a face-opening and eye-pieces adjacent thereto, in combination with a succession of independent annular lens-holders movable in a recess within such frame, means for actuating such holders and the lenses therein, and a suitable indicator to designate the number of each lens.

Issue of June 24, 1890.

DESIGN PATENT NO. 19,925.—POSTAGE-STAMP BOX.—ADOLPH THOMMEN, Newark, N. J., assignor of one-half to Enos Richardson & Co., same place. Application filed May 2, 1890. Serial No. 350,385. Term of patent 7 years.

DESIGN PATENTS NOS. 19,949 and 19,950.—CANE OR UMBRELLA HANDLE.—Henry A. Weihman, Philadelphia, Pa., assignor to Simons, Brother & Co., same place. Application filed April 15, 1890. Serial Nos. 348,097 and 348,-090. Term of patent 3½ years.

TRADE MARK PATENT NO. 18,080,—KNIVES, FORKS, SPOONS AND OTHER Solid and Plated Ware.—M. W. Galt, Bro. & Co., Washington, D. C. Application filed May 3, 1890. Used since October 1, 1889.

"A representation of the head of Martha Washington."

TRADE MARK PATENT NO. 18,081.—KNIVES, FORKS, SPOONS, AND OTHER Solid and Plated Ware.—M. W. Galt, Bro. & Co., Washington, D. C. Application filed May 3, 1890. Used since May 11, 1889.

"A representation of the head of George Washington."

430,692.—REPEATING-WATCH.—CARL RUHNKE, BERLIN, GERMANY, Filed March 20, 1889. Serial No. 304,084. (No. model.) Patented in Germany, July 31, 1888, No. 46,503 ; in England. Jan. 9, 1889, No. 424, and in Switzerland, Jan. 21, 1889, No. 4,46.

430,730.—BADGE.—JOSEPHINE DE YOUNG AND SARAH ANDREWS, MINNEAPOLIS, Minn. Filed March 31, 1890. Serial No. 246,031. (No model.) A badge, having upon one side a recess with a coin inserted and secured therein, and upon the other side, in relief, the representation of a building and the words "The Columbian" and "World's Fair." and also in relief, upon the same side, representations of appropriate figures.

430,739.—REPEATING-WATCH.—AUGUST W. MATTHAEL, BERLIN, GERMANY, administrator of Jens Richter, deceased. Filed Feb. 6, 1890. Serial No. 339,479. (No model,) Patented in Germany, July 19, 1889. No. 50,669 ; in Belgium, July 19, 1889, No. 87,047 ; in France July 19, 1889, No. 199,-680 ; in England, July 19, 1889, No. 11,561 ; in Switzerland, July 20, 1889, No. 1,223 ; in Italy, Sept. 30, 1889, No. 25,969, and in Austria, Hungary, Feb. 2, 1890, No 31,554 and No. 62,415. In a repeating mechanism for watches, a quarter-hour repeating-wheel provided with thirty-six teeth and a notch or recess between each set of three teeth, an hour repeating-wheel provided with twelve teeth, the teeth on the wheels pointing in opposite directions, a pawl pivoted to the quarter-hour repeating-wheel, a gear-wheel connected with the quarter-hour and hour repeating-wheels, a driving-pinion in gear with the gear-wheel, and a fixed ratchet adapted to be engaged by the pawl on the quarter-hour repeating-wheel, in combination with a lock adapted to lock the gear and repeating wheels against revolution in one direction, the hour-hand of the watch, an arm controlled thereby and adapted to control the pawl to move the same into engagement with the fixed ratchet, and two push-pins adapted to be moved in contact with the teeth on the quarter-hour and hour repeating wheels, respectively.

430,763.—FRAME FOR SIGHT-TESTING SPECTACLES.—JOHN K. UNDERWOOD, Geneva, N. Y., assignor to the American Optical Company, Southbridge, Mass. Filed Feb. 19 1890. Serial No. 341,240. (No model.)



[From our Special Correspondent.]

Chicago, June 21, 1890.

Taking the interviews, etc., that your correspondant has had with our local dealers during the past two or three weeks, and discussing them pretty thoroughly, leaves one in a quandary as to whether trade in general is brisk or only fair. In some lines the claim is made that business is exceedingly good, while others claim it is only fair, almost quiet. There seems to be very little ready money in circulation, making collections necessarily slow.

Thanks to the *Press* Club of Chicago, the residents of our city and vicinity, were given a treat a few evenings ago. The occasion being that of the evening on which Mr. C. M. Depew, of New York, spoke on the merits of Chicago, as a site for the World's Columbian Exposition of 1893. Mr. Depew was loud in his praise of Chicago and her hospitality, and has no doubt whatever, that the fair will be a success here, although he worked so hard to have New York chosen as the *Fair City*.

Everything has at last been gotten in good shape at the rooms of the Jewelers' Association. The assembly room has been nicely refitted and furnished. There being now ample room for the introduction of several beautiful mahogany tables upon which all current literature of the trade may be found. The association has been the recipient of some very pretty mantel pieces and statuettes. These are all artistically placed, and give the room a very neat and home like appearance. The office room is large, has excellent light and is in every way well-adapted for the large amount of clerical work done here.

There are very few failures in the jewelry business to report, only two coming to my knowledge since last writing you. These being A. F. Howard, of Beloit, Wis., involving a couple of our Chicago firms for small amounts. The failure of Joslin & Buchwitz, was a complete surprise to all.

Mr. Cutter, of the Elgin National Watch Co., reports the factory worked to its utmost capicity. The city, or rather general offices of this company, are fast nearing completion, and to say the least will be as elaborate a suite of offices as there are in the city.

The firm of C. S. Lesser & Co., the only exclusive material house in the west, have a complete stock always on hand of all the neccessaries of the retail or manufacturing jeweler; Mr. Lesser comes smilingly up and reports business good, and very much better than last year.

It looks from the business done in the Chicago branch of the Gorham Mfg. Co., as though Mr. Prentice will have to start a little factory of his own to get goods to supply the numerous orders he is receiving. The Gorham Co. will shortly be settled in their new factory, and then it is hoped the famine in some lines of their goods will be overcome, and the "back-order" thing will be a thing of the past.

Mr. Haskell, of San Francisco, Cal.; Ira Steinmetz, of Helena, Mont.; Will Winston, Ironwood, Mich., are among some of the buyers in town this week.

The appeal of the Jewelers' Mercantile Agency, from the decision of the court barring them from the privilege of bringing a libel suit against R. G. Dunn & Co., on the ground that they were a foreign corporation, has resulted in a victory for the Jewelers' Mercantile Agency. On May 28th the Appellate Court handed down an opinion reversing the decision of the lower court, and ordering the case back for trial to the circuit court in Chicago. This decision is of considerable importance to New York corporations doing business in Chicago.

The "Manson" Jewelry Manufacturing Co. has been incorporated and will shortly locate, having just about secured desirable offices. The firm is composed of Mr. Manson, Mr. Ferguson, Mr. Adams. All of the above gentlemen have been for years connected with the supply house of J. H. Purdy & Co.

A. H. Bradley, the genial Western agent for Bates & Bacon, 196 Broadway, reports business at least sixty per cent. ahead of last year.

A pretty story this may seem, but it is nevertheless true, that there were at least 250 representatives of Eastern jewelry firms, etc., in Chicago on the 17th and 18th insts.; 53 being registered at one of Chicago's leading hotels alone.

Juergens & Anderson are very busy on some special badge and university medal work. This firm reports trade excellent.

Another "lump" of the B. F. Norris Alister jewelry, stolen from the sample trunks of their Mr. Robinson, has been found hidden in a lumber yard in La Crosse, Wis. The thief has not yet been caught, but the detectives think they are on the right track.

Giles, Bro. & Co. are having an excellent trade. The reputation of the firm for fine diamond setting and engrossing, has been the cause of their having a great rush just at present for class pins, badges, medals, etc. The demand for the non-magnetic shield is something wonderful.

The National Watch Case factory, at Elgin, has started up with as many men as there is room for in the finished portion. The rest of the building has just been completed and will be used as soon as possible. A number of new hands are being employed to learn the work.

Some of the hotels in our city recently furnished by the Gorham Manufacturing Co. with their celebrated electro-plate wares, are: The Auditorium, The Virginia, an elegant apartment house on the north side, owned by the McCormicks; The Wellington, about to be completed, on the corner of Washington avenue and Jackson street; and the new restaurant just added to the Leland. Each hotel having a unique and special design. The service of the Auditorium is one of the most perfect and complete ever finished, and includes a magnificent banquet service, with a colossal Jardiniere, or center piece, which is unequalled in electro-plate.

Wendell & Co., manufacturing jewerers, report trade excellent, their factory being worked to its utmost capacity on university work, badges, medals, etc.

We must be getting rich, and no mistake, if volume of business is any evidence; we really have more than we can do, so says F. Ternendt, 157 Washington street.

The Excelsior Sign Co.'s new specially designed Louis XV. post-signs are having a ready sale. Mr. Grout says they are actually weatherproof and will last for ages. The materials entering into their manufacture are of the very best,

Benj. Allen & Co. report considerable call for the "Ackerman" ring clamp, illustrated in the last issue of the Circular. An improvement has been made on this little tool. It is now nickel plated. Trade in the other departments of this house is rushing.

Mr. B. Linz, with Jos. Linz & Bro., of Sherman, Texas, has just made his maiden visit to Chicago, coupling business and pleasure. He is very much pleased with the World's Fair city. The house with which Mr. Linz is connected is one of the leading houses in Texas.

The Jewelers' School of Monogram and Letter Engraving continues to *boom*. New students are all the time coming in, many of them being young men with a knowledge of watchmaking, who contemplate going into business for themselves and desire a knowledge of the art of engraving. There are at present about thirty students in the institute. Observer.

Mr. R. E. Kehl, of the firm of F. H. Noble & Co., manufacturers of jewelers' findings, has just returned from a successful two weeks' business trip in the East. He reports trade first class and the business outlook good. Their factory is running up to its full capacity and they are unavoidably behind with their orders.





EXAMPLES OF FANCY KNOT RINGS

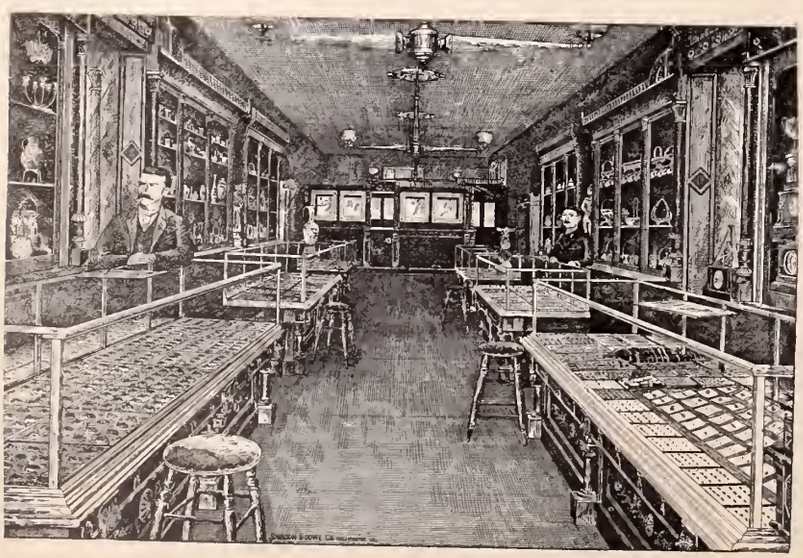
DESIGNED AND MADE BY

HENRY C. HASKELL, 11 JOHN STREET, NEW YORK.



HAMILTON & HAMILTON, Jr.,

11 JOHN STREET, NEW YORK. 7 EDDY STREET, PROVIDENCE, R. I.



FOR SALE.

Splendid Chance to get Fixtures Cheap.

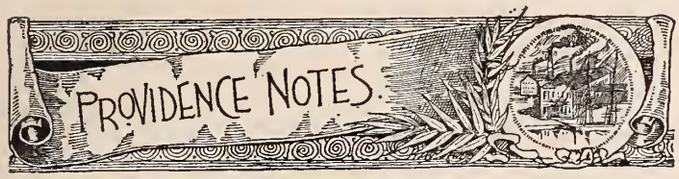
Fixtures of a First-Class Jewelry Store in prosperous City of the South,

All new and of the most elegant pattern. Owner has good reasons for selling out.

Address H. W.,

Care THE JEWELERS' CIRCULAR.

☞ See Illustration of Store.



[From Our Special Correspondent.]

Providence, R. I., June 19, 1890.

The New England Manufacturing Jewelers' Association's annual meeting, an occasion which is always looked forward to with pleasure, was held at Crescent Park, one of Narragansett Bay's most charming resorts, June 6th. The party, including local and Attleboro jewelers and guests from all sections of the country, left town on the 10 o'clock boat. At the park, the dignified manufacturers of trinkets threw off their manly bearing and for the time being became boys, and such boys! The games of foot ball and base ball and what not were played, and when noon arrived and Caterer Boyden rang his big bell, to announce dinner, a hungry lot of play-tired boys flocked to the dining room. A typical Rhode Island clam chowder was then served. After the chowder an elaborate shore dinner with extra courses was placed upon the tables.

After dinner was over the whole party was photographed, and then the business meeting was held. President Lowe called it to order. The election of officers was first proceeded with, Mr. Buffinton, of Providence, hazarding the remark that it had been the custom of the association to elect its officers for life. The following were unanimously chosen; President, Edwin Lowe, Providence; First Vice-President, A. A. Bushee, Attleboro Second Vice-President, W. W. Fisher, North Attleboro; Third Vice-President, O. C. Devereux, Providence; Secretary, John A. McCloy, Providence; Treasurer, Horace F. Carpenter, Providence; Executive Committee, John M. Buffinton, Frank T. Pearce and Henry D. Smith.

In accepting the office, President Lowe thanked the members for the expression of confidence, but desired it understood that he should not accept the election next year.

The treasurer's report showed a balance from last year of $706.43; receipts, $1,207.35; expenditures, $652.36, and balance on hand, $554.99. Mr. Devereux proposed that the annual dues be placed at $5, instead of $4. The proposition will be acted upon at the next meeting.

Messrs. John C. Cummins and Louis Blackinton were elected to membership. The meeting then adjourned. The remainder of the day the jewelers spent in feasting and merry making.

An Englishman whose name is Alfred Peters has been employed by the Gorham Manufacturing Co., for some years past. He was a fair workman, and was considered trustworthy; Peters was detected, June 13, stealing a lot of silver, and a bag of silver scraps valued at $40, was found on his person. He was arrested at the works. The company believe that the thief had stolen silver systematically for a long period.

Fowler Bros. are at present engaged in completing a most beautiful line of goods for the jobbing trade only. They are working on jet samples.

George L. Vose & Co. have been for the past year, running full time. Their button and chain trimming business is steadily increasing, their salesman, now in Chicago, is sending in orders continually, which keeps all the hands busy. This is the first year in five that Vose & Co. have run full time.

The gold ring firm of Richmond & Co., at 102 Friendship street, who for the past 30 years have conducted business in this city, have sold out their entire plant. The purchaser is Charles F. Irons, masonic emblem manufacturer. Mr. Irons, also located at 102 Friendship street, has joined the Richmond's plant to his own extensive one, making altogether a very large and complete business. To Richmond & Co.'s gold ring specialty will be added a new line of emblem rings.

Ostby & Barton are short handed. That is, as far as office help goes. Many are on vacations, and as a consequence, Mr. Barton, is exceedingly busy. Orders as a rule don't come in very briskly at this season of the year, so a few clerks makes little difference. But this season the firm are doing a much more extensive business than last year, early summer, and so every hand that is away is missed.

Death has visited the firm of Thornton Brothers, and with its grim hand has grasped its senior member, James Arnold Thornton. Mr. Thornton in early days was apprenticed to the Whiting Mfg. Co., of Attleboro, where he learned the engraving business, and remained some time. Later he associated himself with F. A. Steer and formed the partnership of F. A. Steer & Co. Till 1880 he shared the profits and hardships with Mr. Steer, and since then, until the day of his death labored with his brother, under the firm name of Thornton Brothers. Mr. Thornton had an honorable war record and was a member of Prescott Post, No. 1, G. A. R. As a business man he was well-known and liked by all who knew him.

Hancock, Becker & Co., have removed their business from 40 Clifford street to 54 Page street. Their new home is better adapted to their increasing business

H. S. Tanner, the Turk's head jeweler, has taken down the partition separating his store from another one of like size. Mr. Tanner now has a store twice the old one's size, and some finishing touches he has added make it one of the handsomest in town.

Many Providence jewelers are enthusiastic yachtsmen. At the recent opening regetta of the Rhode Island Yacht Club, several "jewelry" yachts were entered, and one or two took prizes. Mr. Bloomer's crack sloop *Mignon* took first prize in the sloop class, arriving in several minutes ahead of the Burgess modelled sloop *Awa*.



[From Our Special Correspondent.]

Cincinnati, June 20, 1890.

Business in the wholesale jewelry line continues quite active, therefore the manufacturers are all very busy. The manufacturers of silver ware say that there never was a time when there was such a demand for silver goods as at the present, consequently the factories are pushed to their full capacity. In all branches of the retail trade business has slacked up a little, as it usually does at this season of the year; yet the trade is fairly good, so that there is little complaint.

Wm. W. Varney, who was indicted as one of the men implicated in the sensational diamond robbery of Michir Bros.' jewelry store of a tray of diamonds in broad day light, entered a plea of guilty. The Court, in passing the sentence, gave him the full limit, seven years in the "pen." Varney smiled as the sentence was spoken, and bowed to the Court with the grace of a dancing master as he turned to resume his seat.

Business continues good with Duhme & Co. They are having a great demand for silver goods and are making immense quantities. They say there never was such a call for these goods. This year promises the best year of their business existence.

The John Holland Pen Co. are enjoying an excellent trade in their fountain pens. They are hardly able to supply the demand, although they have recently entended their plant. Thus we see an article of merit always finds a good market. They are getting quite a trade for their iridium plating, which is superior to silver, as it will not tarnish and always appears bright and new. They can plate

steel, which cannot be done with silver. Mr. Holland has just plated a pistol for the Colts Arms Co., which was tested in various ways, and stood the test admirably.

Michie Bros. are gradually working to the front in their manufacturing departmeuts. Among the orders completed the past month were the class rings for the Cadets of the West Point Military Academy of New York. The encouraging news to them is the return answer of the receipt of the rings by the Class, and that they were highly pleased with the design and workmanship, and that every ring fitted perfectly and not a complaint was heard from any member. They have also just completed an order for eleven 14 K Past High Priest Jewels, to be presented to past officers of Willis Chapter of this city. These jewels are perfect gems of beauty. Besides these, they completed numerous small orders for different societies.

The German Anti-Rheumatic Ring is the name of a ring now being sold by jewelers. It is claimed, and they publish numerous testimonials showing their claims are well founded, that it is a speedy and permanent cure for rheumatism, neuralgia, lumbago, etc. An agent, a jeweler, is appointed in every city. Messrs. Michie Bros. are the agents for this city.

Mr. Bene, of Bene, Lindenberg & Co., importers of diamonds and jobbers in jewelry, is in Europe on business and pleasure combined.

Herman Keck, Jr., of the H. Keck Manufacturing Co., has returned from an extended European trip.

E. & J. Schweikert, the young and vigorous firm, are having a splendid trade. Their repair department for watches, etc., is overrun with orders. Business with them is on the increase ; should it continue, they will be compelled to increase their facilities.

An attempt was made a short time ago to rob the establishment of Jos. Voss & Sons. The thieves, however, were frightened away before accomplishing their purpose.

Mr. Oskamp, of Oskamp, Nolting & Co., says their sales to date are far ahead of last year, chiefly in watches. They aim to sell the higher grade of watches, making a specialty of "Railway Special," "Railways" and "John C. Dueber." They advise the retailer to buy the Dueber-Hampden watches, which they consider the best.

Geo F. Black, salesman for Jonas, Dorst & Co., was drowned in the river at Memphis, Tenn., on the 10th of June. He was standing on the rear platform of a sleeper which was backing on the transfer boat ; by the carelessness of the train men the sleeper was allowed to buck against the bumper with such force as to throw Mr. Black and another gentleman, Mr. Joy, of Memphis, into the river. They both being good swimmers, struck out. Mr. Black remained in the current of the stream ; he was wearing a long duster, and it was noticed that it impeded his attempt to swim, and before a boat could reach him, he threw up his hands and sank never to rise again. The other gentleman swam for the shore and was saved. Mr. Black was an excellent gentleman, of fine appearance and a good salesman. He leaves a little daughter only.

Jos. Noterman & Co. have had a splendid trade the past month. They have made three times more badges and medals this month than for the corresponding time last year. They are also making some very handsome and unique designs in diamond rings, of which they have a great variety.

Jonas, Dorst & Co. are not complaining about their business, it has been good all the season. Their trade extends over a wide territory.

Clemens Hellebush says his trade is fully up to the average and he has no cause for complaining.

A YOUNG WOMAN'S TASTE.

MRS. BUNKER (of Boston)—I think that Miss Waldo was the most perfectly dressed woman in the room.

MRS. EMERSON—She has exquisite taste. Did she wear jewelry ?

MRS. BUNKER—Spectacles only.



MINNEAPOLIS, MINN., JUNE 17, 1890.

Trade is naturally dull at this season of the year, and Minneapolis and St. Paul jewelers are no exception to the rule. Most of them are at the Lakes, or are utilizing the dull season for carrying out improvements.

A. Sanborn is now established in his new store, at 26 Washington Avenue, South. He has what many consider the best furnished store in the Northwest.

Ed. Strickland, who has a world-wide commission to represent the New Haven Clock Company, has recently paid the Twin Cities and the Northwest a visit and disposed of a good many goods. Trade was good everywhere, except in South Dakota, and he abandoned his trip through that State at Sioux Falls. It has been six years since the Northwest trade was specially solicited by Mr. Strickland, and he naturally found that business had to be worked up anew, but with splendid results. Mr. Strickland has asked to be placed in charge of the New Haven exhibit at the World's Fair.

A despatch from Butte, Montana, states that J. M. Donelson, the Minneapolis jeweler, who opened a store there and was robbed of $10,000 worth of jewelry some weeks ago, has been arrested and held as a witness against the two burglars, who are also under arrest Donelson considers that he is in hard luck. He was about leaving for St. Paul and Minneapolis when arrested. The assignee who has charge of Donelson's store in Minneapolis, when seen was very much surprised to hear of the result. He said that Donelson had sent word a few days ago that he expected to arrive in Minneapolis the latter part of the week. Donelson's bond has been fixed at $1,000. The Minneapolis police and detectives refused to believe that Donelson had been robbed, and look upon his Montana record as "crooked."

Not long ago the police of La Crosse, Wis., arrested a man who was offering watches for sale about town. In going through an alley he broke away and hid in a lumber pile, and got a boy to take him across the river in a boat. Telegrams caused a search to be made in a house of ill fame he was known to have visited, and at least four quarts of fine jewelry, including a number of Waltham watches in gold cases, were found hid around the place. The goods were stolen from a traveling salesman for Norris, Alister & Co, Chicago, at Waverly, Iowa, and are valued at between $6,000 and $7.000.

Officer Godfrey discovered the jewelry store of W. A. Edwards, 81 West Third Street, St. Paul, open on Sunday night, June 15. It is claimed $750 worth of jewelry is missing. As the show-cases were unlocked, the affair is considered somewhat peculiar by the police.

Talk about grandfathers' clocks. Minneapolis can show one with the oldest of them. There is a clock owned by H. O. Brager, a jeweler at Albert Lea, that is nearly two hundred years old. It is one of the old time music clocks, made in 1720 by Eeland Knudsen Handson, in Norway. The ancient time-keeper is still in good condition. The mechanism is excellent, and, although worn, performs its duties as well as of yore. The dial plate is beautifully mounted. It is made of brass, and fastened to it is a ring of old English tin, upon which is engraved the hours and minutes. Above the face are two angels holding a crown, under which is engraved, "Eeland Handsord, Ano 1720." The corners are decorated with gilded angels, crowns and crosses. The clock strikes each hour of the day and then plays an old Norwegian hymn. During the day it plays four different tunes. The arrangement for playing this music consists of nine bells and sixteen hammers. The clock-work is run by means of a leaden 28½-pound weight. The case is 7 feet and 8

inches high. Upon the door is painted a verse of an old psalm, as follows :

Hvert klokkeslet,
Hvert Aandedræt,
Mig dommedag paaminder.
Hjelp, Jesu sœd, of al min nœd,
Min lampe tændt maa findes.

Translated. the verse means :

Each moment of time,
Each breath of mine,
Reminds me of judgment day.
Help, Jesus, dear, in all my need,
That my lamp may be found burning.

The music is all of the old church folk songs. This old relic was sent to Mr. Brager from Norway, in May, 1884. A Philadelphia relic-hunter offered him $200 for it, but it was refused. If Mr. Brager sells it at all it will be to the Norwegian Art Association, of Minneapolis. A. C. Haugan and S. E. Olsen the local dry goods prince, have interested themselves in the matter, and are thinking of purchasing it.



[The Circular is not responsible for the opinions or statements of contributors, but is willing to accord space to all who desire to write on subjects of interest to the jewelry trade. All communications must be accompanied by a responsible name as a guarantee of good faith. No attention will be paid to anonymous letters. Correspondence solicited.]

La Porte, Ind., June 15, 1890.

To the Editor of the Jewelers' Circular:

Please let me know how you describe a cylindrical lens. I mean to tell a customer what a cylindrical lens is. Subscriber.

[A cylindrical lens is made by grinding a flat piece of glass to fit the concave or convex surface of a cylindrical surface. It has one line in which it does not act upon light. This is called its axis and it corresponds to the axis of the cylindrical surface upon which the lens is ground. This lens is used for relieving the distorted vision resulting from an oval cornea.

When the axes of two ± cylinders of the same number, + and − correspond, they neutralize each other. When the axes stand at right angles, each lens has its greatest effect; when their axes stand at less than right angles the effect or strength of each cylinder is reduced equally, but the meridians of greatest refraction still remain at right angles. The numbers of the cylinders have simply been changed by making the angle between the axes less than a right angle.]

Philadelphia, Pa., June 10, 1890.

Editor of the Jewelers' Circular:

We send you to-night by mail the match box that we wrote to you about several weeks ago. If you can find out the manufacturer of the same, it will be a great favor. George Eakins & Son.

[The match box is the product of the Whiting Manufacturing Co., Union Square, New York, and was made about three years ago. As you may know, the Whiting trade mark consists of a lion passant with one of its paws resting upon a shield, which bears the letter "W." In the match box, the shield portion of the trade mark has been worn away, but the lion is almost perfect.—Ed.]

BACK NUMBERS TO BUY AND SELL.

Would like to buy Oct. 1889 and Jan. 1890 numbers of The Circular. Address "X."
Care The Jewelers' Circular.

Obituary.

HENRY WALDSTEIN.

Henry Waldstein, one of the most widely known opticians in New York, died on June 14, at his home, from heart disease. The deceased was born in Bavaria in 1818 and received a technical education at schools in Vienna and Munich. In 1840 he came to America, and founded at 545 Broadway, a branch of the business of his father, S. Waldstein, who was one of the best known opticians in Europe, having been established for over a half century at Vienna. He later moved his business to 451 Broadway. At the present address, 41 Union Square, the business has been located for over fifteen years. Mr. Waldstein was the inventor of many improvements in optical goods and instruments, prominent among which is his well-known adduction glass, a variety of opera glasses, whose construction produces harmony between the accommodation necessitated by the use of perspectives of every description, and the corresponding convergence of the visual axes, by making the convergence as gradual as possible. He sold to Alvin Clark, the celebrated telescope maker, the first rough glass discs applied in the manufacture of telescopes.

Mr. Waldstein leaves a wife and three sons, one of whom, Charles, is professor of archæology in the university of Cambridge, England. He was one of the oldest and most respected members of the congregation of Temple Emanu El, under whose auspices the funeral services were conducted at Salem Fields, Brooklyn.

TRUMAN H. BALL.

The sudden death of Truman H. Ball. of Portsmouth, N. H., startled the people of that city, and caused regret among the older members of the trade. Mr. Ball was for several years a member of Jones, Low & Ball and Jones, Ball & Porr, Boston, the predecessors of the well-known house of Shreve, Crump & Low. The deceased had recently been interested largely in shipping, and was a director of the New Hampshire National Bank since its organization. He was seventy-four years old, and leaves a widow, four daughters and two sons.

JAMES ARNOLD THORNTON.

James Arnold Thornton, senior member of the jewelry manufacturing firm of Thornton Brothers, Providence, R. I., died at his residence, June 7, after a short illness, with pneumonia. Mr. Thornton was well known and highly respected in both business and social circles. The deceased was born at Warren, R. I., and after acquiring an ordinary school education, learned the trade of engraving in the factory of the Whiting M'f'g Co., then of Attleboro. He remained in this factory for a lengthy period, after which he engaged with G. & M. Church, of Providence. Leaving this firm, Mr. Thornton, desiring to go into business for himself, formed a partnership with F. A. Steere, under the name of F. A. Steere & Co. In 1880 this firm dissolved and a new firm under the name of Thornton Bros. was organized. This house has been eminently successful. Upon the first call for troops from Rhode Island State, in response to President Lincoln's call for volunteers in 1861, Mr. Thornton was one of the first to respond, and enlisted in Company G, First Rhode Island Detached Militia, and took part in the first battle of Bull Run. Shortly after his return he re-enlisted in Troop D, First Rhode Island Cavalry. On March 19, 1862, he was promoted to second lieutenant and transferred to Troop D, Third Rhode Island Cavalry, thence was transferred to Troop M, same regiment, and July 9, 1864, was promoted to first lieutenant of the same company. He was mustered out of service May 26th, 1866. He was an honored member of Prescott Post, No. 2, G. A. R , of Providence, and his death will be sincerely mourned by all who knew him, as he was a genial, honorable gentleman. He leaves a widow.

Pearl Fisheries of Lower California.*



THE MOST important marine pearl-fishery on the American continent is that of Lower California, the central point being at La Paz. Here the true pearl oysters, Meleagrina or Margaritophora, are found, on the eastern shores of the Gulf of California, from Cape St. Lucas to the mouth of the Colorado River, taking in about 1,500 miles of coast, including the gulf islands. They are also found from La Barra de Ocoz, which is the boundary line between the republics of Guatememala and Mexico, to Mazatlan, a distance of 2,000 miles, making for the pearl fisheries a total extent of 3,500 miles.

These fisheries have recently been confirmed to the Pearl Shell Company of San Francisco, by special franchise from the Mexican Government. The beds were first discovered some three centuries ago by Hernando Cortez when he crossed to the Pacific and discovered Lower California, and the name of California, derived from "calidus," hot, and "fornius," a hearth, it is believed, is due to this journey, having been given by Cortez, who found the heat intense when he first touched California soil. He took possession of the fisheries, and sent a number of fine pearls to the Queen of Spain, subsequently requiring all fishers to send to the Blessed Virgin one-tenth of all they found, and one-tenth to the King of Spain. After some intermittent work, the fisheries, about 150 years ago, were again worked, with system and with great success, by one Juan Ossio, who took from them yearly from 300 to 500 pounds of pearls, actually packing them on mules and selling them by the bushel The shells were all brought up by head divers, and pearls were taken from them so plentifully that they became of comparatively small value. This heavy drain had the effect of rapidly diminishing the supply, and it is only of late years that fishing has again been carried on systematically. At present numerous beds are known and worked, at Loreto, off Point Lorenzo, the Island of Cerrabro, the harbors of Picheluigo, La Paz, and in fact the whole west coast of the Gulf of California from La Paz to above the island of Loreto, and in the east the island of Tiburon, and the land above and below that island. All these places have been famous for their pearls.

A late authority writes that the beds of the pearl oyster are found on the coast of the Gulf from Cape San Lucas to the twenty-eighth degree north latitude, including the northern islands. The shells are also found on the southern coast at points which are known, but further exploitation has been abandoned on account of the lack of harbors for the protection of vessels used in these fisheries. The pearl oysters seem to prefer well-sheltered bays or harbors where fresh water empties, and in such localities the finest pearls have been found.

According to the report of an expert who visited the district in 1860, the season lasts from June to December, and the time for diving is three hours a day, one hour and a half before low water and one hour and a half after. On an average, one day in every week is a fast day, on which, as well as on Sundays, no work is done. A good day's work for one diver is to procure ten dozen oysters, though some of the best men frequently get as many as fifteen dozen. Of course a great deal depends upon the locality. The shells average about 7,000 to the ton, and calculating the season at 150 days, each man procuring 15,000 oysters, the total of shells procured by 450 men is about 2,000 tons. Formerly on the independent system, the divers generally preferred to sell the oysters unopened for about twice the price that they would receive for the shells only, the price of shells averaging $4.50 a thousand. They went out in canoes, three, four, and sometimes five or six to each canoe, but seldom in greater number than four.

The rise and fall of the tides is about twenty feet. The currents run very swiftly among the islands, except just before and just after low water, and just before and just after high water; but before and after high tide the water is too deep for divers, except in the shallowest places, which, of course, are generally exhausted, as they are always accessible. The divers claim that they can easily reach a depth of twelve fathoms when not hindered by the currents, and can remain there from a minute to a minute and a half. On reaching the place where they intend to dive, the canoe is allowed to float, or is paddled slowly by one of the men, while the others, with their head close to the water, are watching the bottom. Notwithstanding that the bottom is more or less rocky, they can distinguish an oyster at a depth of fifty feet. When one is observed, the diver goes down, and if there are several in the place (it is said that there is always two) he brings up all he can secure during the minute or two he is down. If a spot is found where the oysters are abundant, a basket is sunk by means of stones, having a rope attached, and the diver can sometimes fill it in a few minutes, coming up occasionally to take breath. Those in the canoe take turns in diving, in paddling, and in resting, so that of the three or four in a canoe, not more than one dives at a time. The divers take no food whatever on the day they intend to dive, unless the hours for diving are to be very late in the day, when they take a little broth in the morning. They go down with stomach as nearly empty as possible, so that the action of the lungs may not be interfered with.

In 1860, in order to conduct pearl gathering in a more scientific manner, the owner of the Mexican grants, Señor Navarro procured from San Francisco, Cal., a number of expensive schooners, surf-boats, professional divers, and costly apparatus. After several years' experience he found that his experts, with their expensive outfit, were no more successful than the naked Indian divers, while the exorbitant wages demanded by them so diminished his profits that he wisely went back to the primitive methods followed by his ancestors. At present those shipowners who undertake the fisheries on a large scale use apparatus imported from France and England, by means of which each man is able to bring up daily 300 pearl oysters. The men employed are powerful Mexicans, and every diver has five assistants. Four men work the air pumps for the suited diver, and the fifth attends to the life-line, letting down the diver and hauling him up, as well as hoisting up the nets or baskets full of shells and lowering the empty ones. The pump-men are fed and housed, and receive $15 a month; the life-line man is similarly looked after, and receives $25 a month; the diver receives $45 a month, and one-tenth of all he brings up, netting him as high as $500 a month, if he is fortunate. Connected with each fishing party is a schooner of from 60 to 200 tons burden, and two or three small boats. The men live on the schooner during the entire six months. In addition there are numerous divers who work independently, and who show wonderful skill and aptness in their work. Generally, with no other appliance than a heavy stone attached to the waist, they plunge naked to the bottom, select suitable bivalves, and gather them into a bag, remaining under water as long as two minutes. The shells containing the pearls vary in diameter from 2 to 8 inches, 6 inches being the average size. They are found on hard rocks or on sandstone at the bottom of the sea, usually in bunches, holding to the rocks by a fibrous beard (byssus), the circular opening being on top and the shells usually a little open. The oysters are vertical, not lying on the flat. Each diver has a knife, with which he cuts a bunch loose and places them in a basket or net by his side; this is hoisted up

* From "Gems and Precious Stones in the United States, Canada and Mexico," by Geo. F Kunz. Published by the Scientific Publishing Co., 27 Park Place, New York. Copyrighted.

when full, an empty one descending at the same time. On rising to the surface, the fisher empties his bag into one of the waiting surf-boats, which crafts, under careful guard, deliver their loads to a well-armed schooner, the latter vessel running into shore at nights to discharge the accumulated cargo. Occasionally, during all the time he is under water, a man may not send up a single shell containing a pearl ; at other times there may be $10,000 worth in twenty shells. A very strict police system is necessary to prevent serious thefts, which, despite the utmost vigilance, are of daily occurrence. On land the cargo is turned over to keepers, and the mass is surrounded by guards armed to the teeth. The shells are pried open with a flat knife, and the mussel is separated from each shell. A gristly substance attaches the body of the oyster to the shell, and covers about one-fourth of its area, the remainder being occupied by the pearl-bearing membrane, a black, jelly-like coat, and of course a part of the living shell-fish. (See illustration.) The shells are handed over to



PEARL OYSTER WITH ADHERING PEARL.
From Bay of Guaymas, Lower California.

another man, while the opener takes the separated fish, and examines the inside of the black membrane for the pearls he is in search of, and finally closes his fist over the fish to squeeze out any pearl which may be lodged in the interior, after which the pearls found are examined by experts, their value estimated, and a settlement made at once with the divers. Usually their wages amount to twenty-five per cent. of the total find, and they are paid by an allotment of the pearls taken during the day. On the outside the shells are covered with seaweed or other submarine growths, and look not unlike a Tam O'Shanter cap. All this growth is removed, and the shells are cleansed and picked, finding a ready market in Liverpool, London, and Hamburg at prices of from ten to twenty cents a pound. The profit from these fisheries is not as large as might be magined, because the expenses are very heavy, and there is always nvolved a very considerable element of chance.

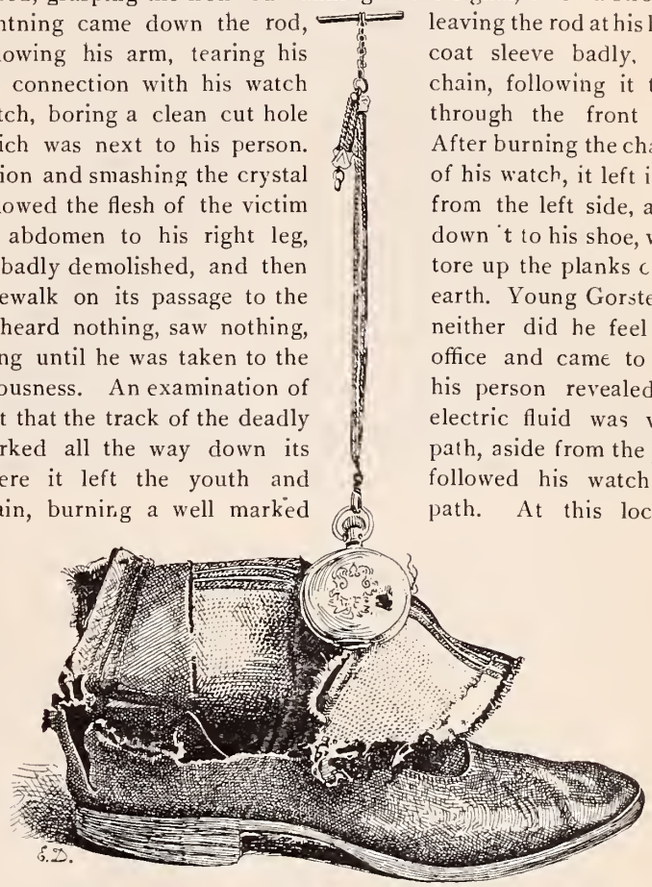
About 1863 a company was organized in New York City for the purpose of gathering pearls and pearl shells on the Pacific Coast, and secured the use of a submarine boat, the peculiarities of which were that it carried a large supply of fresh air condensed within its walls and was provided with a means of purifying the air in the working chamber, thus dispensing with the necessity of communicating with the surface as it furnished an atmosphere in which men could work for a whole day with perfect ease. The company procured a lease of property at the island of Tiburon, hoping, with their facilities, to secure unusual return ; for, with their submarine boat, they would have the advantage of exploring, locating and working beds where divers could not go. Presumably their efforts were not successful, for the company soon went out of existence.

During the subsequent summer a new company obtained the concession for the Lower California pearl fisheries, and they decided that all the fisheries on the Gulf of California should in future be worked by Chinamen.

(*To be continued.*)

How a Watch Became a Life Preserver Against the Deadly Electric Fluid.

AT PIQUA, Ohio, on the morning of the 18th of June, Joe Gorstemeyer, in the employ of the Dayton and Michigan R. R. Co., was standing at the target, or signal pole, with his left hand raised, grasping the iron rod running to the signal, when a stroke of lightning came down the rod, leaving the rod at his hand, following his arm, tearing his coat sleeve badly, making connection with his watch chain, following it to his watch, boring a clean cut hole through the front case, which was next to his person. After burning the chain to fusion and smashing the crystal of his watch, it left it and followed the flesh of the victim from the left side, across his abdomen to his right leg, down it to his shoe, which is badly demolished, and then tore up the planks of the sidewalk on its passage to the earth. Young Gorstemeyer heard nothing, saw nothing, neither did he feel anything until he was taken to the office and came to consciousness. An examination of his person revealed the fact that the track of the deadly electric fluid was very marked all the way down its path, aside from the place where it left the youth and followed his watch and chain, burning a well marked path. At this location



only the watch and and chain seem to have suffered in connection with his clothing, which was badly burned by the heated chain. So intense was the heat that it fused the chain at several of its smallest places, and the cut annexed will give a very fair idea how roughly the victim's coat, vest, pants, underwear and person were treated. As a scientific electrical occurrence, we think this rivals anything now on record, and ought to go down the annals of history. The facts in the case show that this youth really conveyed 1,000 volts of electricity down his person to the earth, and still is living and doing well. A thorough investigation of the target or signal pole shows no connecting wires by which the electricity may have been conducted to it, but that a full thunderbolt struck the pole and ran down the rods, and that the boy's moist hand conducted it from the rods through and down himself ; and also that the watch and chain being over the heart, the seat of life, according to the best calculations, causing a conducting bridge over it, and thereby saving the boy's life. We should say that the watch was in his upper vest pocket, which was located a little below the heart, though it was attached by the chain to his vest a little higher. A very curious thing was noticed in regard to the hole punctured in the case. If a rifle ball be fired through any substance it depresses the surface of the substance at the entering point and raises it as it passes through, while in this case both sides were raised and rough. The movement of the watch was heavily charged with electricity, so much so that its motion was very short and quick.

Those Windows Again.

THOUGH the manner of making an alluring window display is, perhaps, the most be-written of all shop subjects, its importance as an agent of success in business is still unappreciated by many dealers. The reader will bring to mind a lengthy article on the subject which appeared in the December number of the CIRCULAR. In it the general principles governing the art of window dressing were discussed, and a half dozen of the most attractive windows in New

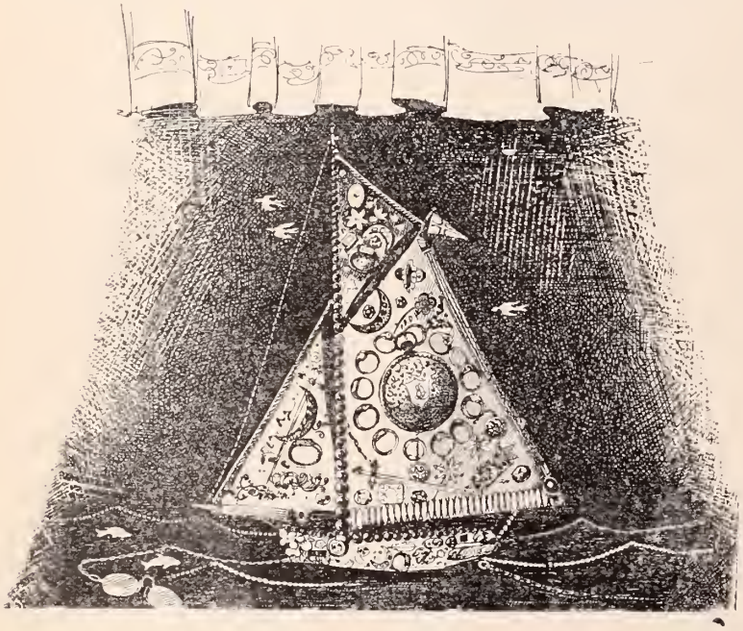


FIG. 1.

York City were represented and fully described. In selecting for discussion real rather than ideal displays, the writer had in mind the epigram, that what is, is; that is to say, that if a window of a Union square store, by reason of its artistic dressing, attracts crowds of pedestrians, an imitation of such a window will prove successful elsewhere. Still, as it is necessary to vary the arrangement—the more often the more effective—there cannot be too many suggestions for making attractive displays.

Each season is fruitful of ideas, and none more so than the present. The interest manifested by the people in all varieties of

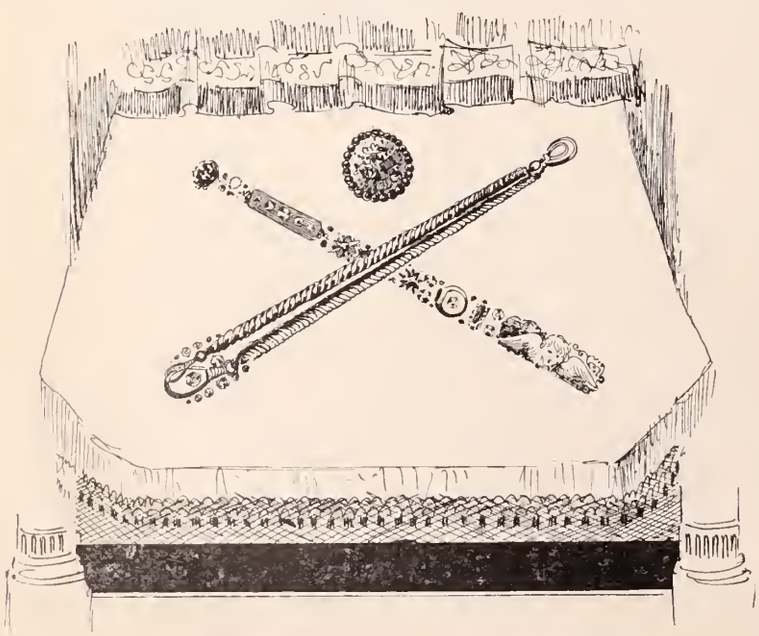


FIG. 2.

aquatic sports, such as yachting, boating and fishing, should be taken advantage of by the jeweler for displays. For instance, if the flooring of his window be spacious, he should lay out on it the form of the conventional yacht, as an insignia of the water. This he can easily do with the goods he has in stock, as seen in the illustration, Fig. 1. The hull, sails and principal riggings may be outlined by chains and necklaces; while diamond, pearl and other bright stone necklaces may represent the water. As the dealer undoubtedly carries a line of enamelled yacht club signals, he can top the mast with one. Realistic details, such as a fish scarf pin or brooch in the water, will add to the effect. Watches, rings and other articles may occupy the spaces within the chains. Thus a complete assortment of goods may be displayed, while at the same time it is arranged in a manner to attract the attention of passers-by.

Base ball, horseracing and other sports of the season, should suggest ideas. A couple of base ball bats crossed, with a ball may be represented by chains, as outlines, and watches and jewelry to fill the spaces. See fig 2. Regarding horseracing, it is difficult to conceive practical ideas. A horse in full run, represented as accurately as possible, would prove very effective. See fig 3. The window-dresser could sketch the outline of the design on the flooring of the window with some easily eradicable substance, and place the chains on the marks. Two crossed crops, with a jockey cap, may be represented with enough accuracy to convey to the spectator a corrected impression of their purpose. In the illustrations the figures have been made considerably out of proportion, so as to enable the reader to appreciate the details.

These few examples may open to the mind of the jeweler a new field for ideas for window-dressing. It is well in such dressings to leave the space outside the design free. When the ideas of the principal may temporarily reach a limit, then allow an assistant—boy

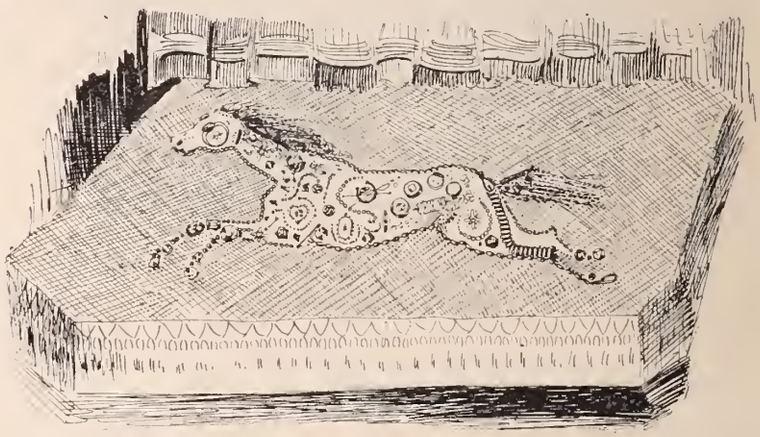


FIG. 3.

or junior, whichever he may be—to express an opinion; it may be that he has an idea worth using. Many bright youngsters will not attempt to force from their employers an acknowledgment of their ability; but if encouraged to try, may prove of great assistance.

THE CAUSE OF IT.

[*From Smith, Gray & Co's Monthly.*]

ETHEL—How restless and full of movement that actress is!

MAUD—You would be full of movement too if you had on as many real diamonds as she has and were trying to make them sparkle.

WHY HE COULDN'T CATCH UP.

[*Puck.*]

CASHIER (to clerk who asks an advance on his salary)—I can't see why you are not able to make a month's salary last you a month, instead of coming to me on the 15th for money.

CLERK—May be it's because I draw half my pay ahead every month.

PARIS GOSSIP.

[From Our Special Correspondent.]

HYMEN KEEPS THE JEWELERS BUSY—HARDSHIPS OF THE RETAIL STOREKEEPERS—AN HOUR WITH LA MODE.

Paris, France, June 6, 1890.

Our manufacturers ought not to complain. They have been very busy with wedding orders during the whole month of May, and they have still plenty more work to do for customers who can wait until the end of June. Therefore everything is at best in those quarters. I am sorry I cannot say the same about retailers. It is more and more evident that the average Parisian shopkeeper has neither the artistic education, nor even the practical knowledge required, now-a-days, to conquer the wavering mind of a refined customer. Besides, when the retailer has to deal with a man who shows no taste, he soon finds out that, on the other hand, the man knows a thing or two, and has been about quite enough to get an idea of prices. In that case the profit is bound to be very small, since the buyer wants an article to be found in all jewelry shops, and is ready to visit no end of those places and even bazaars, until he gets it cheap. My sincere opinion is that before a year has elapsed, a great many among our retail jewelers will be obliged to give up business, unless they can afford to lose plenty of money, and are bent upon doing it.

Let us cast a rapid glance at different classes of retailers in the jewelry line, and endeavor to see why many of them are doomed to ruin. Our middle class shop-keepers find it next to impossible to stand against the competition of great bazaars, which is easy to understand, since the latter, selling all kinds of articles, on a very large scale, can afford to label their jewelry at a low price. Besides, a manufacturer who receives large orders from those places, say the Magisins du Louvre, the Bon Marche, and even the Bazaar de l'Hotel de Ville, is bound, if he wants to keep those customers, to allow a greater or less discount on his goods, which he sells there easily and with a clear profit, being paid, as a rule, within the month. I know that some of them might deny it, but I am perfectly sure of what I say. Therefore, on that point, the retailer is placed at a very great disadvantage against his terrible competitors, considering that he pays more for the same kind of goods, and is obliged to sell them at a much higher price than they do, if he is at all anxious to cover his expenses.

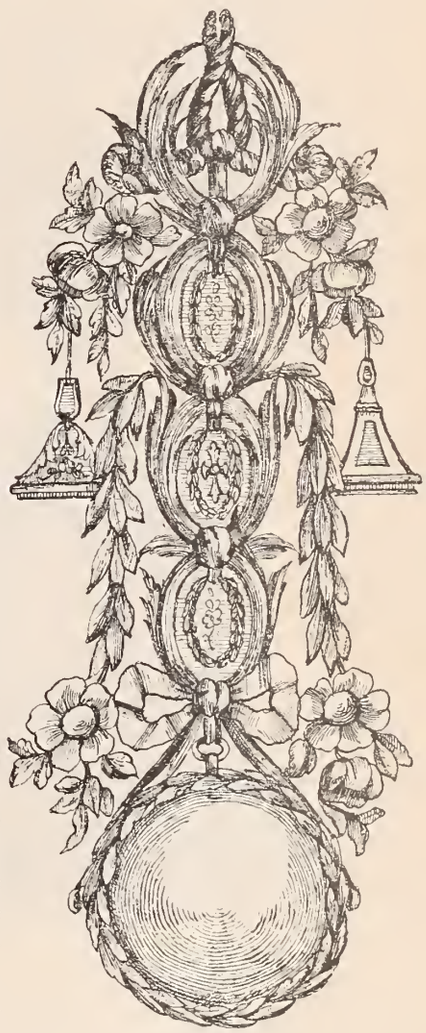
Among retail jewelers, some, I may say, have found several ways of overcoming that crushing disadvantage. I mean those that belong to that race in which every individual has the genius of business inborn with him. They foster competition between manufacturers, find out those who want ready money; then they value the goods at a quick glance, and with a rapid decision, give a price for a lot, offering at once a handful of chinking gold. The needy manufacturer, being allowed no time to reflect, generally yields, and often regrets it, when, after the customer has gone with his goods thus carried by storm he finds out, through a close reckoning, that he has sold the articles at very little more or sometimes even at less than their cost price.

These sharp retailers, who are but few in number, are always on the lookout for the occasions of buying cheap, and, consequently, spend a part of the day in attending public sales, while a well trained wife looks after the business. These will always be prosperous since they are enabled to attract the attention of the public by their fetching prices, through finding out where to get everything at the lowest. But they are the rare exceptions among the lot of helpless middle-class retailers.

Now, if we turn to the jewelry places whose sparkling displays are the chief features of our wealthy neighborhoods, how many of them shall we find that can boast of havign any considerable custom? Some of these retail jewelers know very little more than the A B C's of their trade, and unless they have to deal with people willing to choose among ready patterns, they find it difficult to obtain an order. They lack that special artistic knowledge which, alone, would enable them to inspire a refined customer with a strong confidence in their good taste. Besides, they are in the vicinity of well-known manufacturing establishments which have managed, through repeatedly taking part in all important exhibitions, to draw the attention of the aristocratic public, and this is for them a crushing competition. Therefore, unless they endeavor as soon as possible, to educate themselves, (which might give them more trouble than they could well afford, these retailers will have sooner or later to give up business.

In fashionable parts where luxuries of all kinds are provided for a floating population of amiable foreigners, there are some retail jewelers who will never have to complain. Yet the less I say about them the better, although we only judge by the appearance of their shops it is hardly possible not to notice them. If my information is correct, it appears that elegant females, whose chief object in life is to initiate exotic gentleman to the mysteries of the Parisian *demi-monde*, take their pupils to these shops whenever the latter feel inclined to present their fair teacher with a sparkling token of their gratitude.

People who are under the influence of such dainty feelings are seldom disposed to bargain, so that they always pay the full price. I have been told also (yet I can hardly believe it) that these "teachers" generally receive from the jeweler a good commission for their trouble.



LOUIS XVI. CHATELAINE.

The fashion of wearing a watch hidden inside the top of a high neck bodice is a very strange one; yet it seems to spread. I must confess that I fail to see why it should be so very successful. The fact of its being slightly uncomfortable might be overlooked by Parisian ladies, accustomed to endure all kinds of torture, in the way of pinching boots, tight bodices, etc., for the sake of looking pretty. But here the unwelcome sensation which must result when a watch in worked gold or studded with precious stones is closely applied on the neck, can hardly be soothed by the pride of showing a tiny chain hanging straight from the top of the bodice, and weighed down by a filigree ball, or some other pendant. Among ladies who feel obliged to follow this queer fashion, some give a better effect by arranging the chain another way. They have it fixed to an elegant brooch, from which it drops gently, and then passes up with a curve to the neck, and disappears.

Chatelaines are still worn with costumes *ad hoc* by ladies of a stately carriage. Our illustration shows a Louis XVI. chatelaine in vari-colored gold with a backing of silk. I must say that the effect of

it, graceful and neatly chased as it is, was very pleasant as it hung from the waist of a handsome dress in the Marie-Antoinette style, worn by a fine looking lady of dignified mien, at one of the last fancy balls.

A year ago, a competition called the *Lendit de Paris*, was opened with the object of developing among school fellows, in France, a liking for bodily exercises. The name given to it used to be the one of a Parisian fete for students, in Mediæval times. This year, the competition was especially brilliant, and attracted on Sunday last, 1st of June, a very large crowd to the Bois de Boulogne. The chief prize is a cup in massive silver a present, from Mr. Carnot to the *Ligue Nationale* de l'Education Physique. Every



ORIGINAL FROM WHICH PRIZE TO THE *Ligue Nationale de l'Education Physique* WAS DESIGNED.

year this same cup will be competed for by young fellows from various colleges, and the school the winner belongs to will keep it for a whole year, then give it up to the school of the new winner, and so on. As you see, it is done very economically. I do think they could afford to give a new cup each time, and all silversmiths must be of the same opinion. Our Fig. 2 shows the prize cup, which is a faithful copy of the gallo-Roman vase, found in 1862, at Alise-Sainte-Reine, in a ditch of the circumvallating works of Julius Cæsar's camp. The reproduction is as beautifully chased as the original, and brings out well those pretty sprigs of myrtle surrounding the vase. The valuable relic which has been chosen as a model for the cup of *the Ligue* can be seen at the museum of Saint Germain.

JASEUR.

Lancaster, Pa., April 29, 1890.

We wish to bind Vol. 20 of THE CIRCULAR to complete our volumes since the first number, but find ourselves short of Nos. 9, 10 and 12 of Vol. 20. Kindly send same. BOWMAM & MUSSER.



[FROM OUR SPECIAL CORRESPONDENT.]

TRADE HOLDS THE STEADY MIDDLE COURSE—RENEWED ACTIVITY IN WEDDING RINGS—OLD METHODS VERSUS NEW IN WATCH-MAKING—FASHIONS AND FANCIES IN THE LONDON WORLD—A VISIT TO EDINBURGH EXHIBITION—"SCOTCH JEWELRY" IN VOGUE—CASKET PRESENTED TO H. M. STANLEY BY THE CORPORATION OF LONDON.

LONDON, June 13th, 1890.

I have come to the conclusion that the fact that just at present we are not hearing a great amount of talk as to the condition of our jewelry trade, is a good sign rather than a bad one. It is very exceptional to find the jewelry mind so complacent as it appears to be just now. Our manufacturers are not complaining of their inability to get workmen enough for their orders. Neither are they grumbling that they cannot find work for their regular hands. The disappointments experienced in various branches have left a good lesson behind them, and it will be all the better for the trade if manufacturers are not quite so full of "great expectations." We are learning that the steady continuous trade is best in the end. Spurts, in the shape of large orders, are very nice while they last, especially if the prices and terms, are as favorable as the extent of the orders. But the evil of them is that they often tempt manufacturers to go on with the increased production too long, and the inevitable evils of overstocking follow. Overstocking in our trade has a different effect from what it has in many other industries. With us it means a lot of money sunk in wages, as well as in material, for which the return may long be deferred. Where expensive labor forms such an important item in the production of goods, it is not wise to employ it too largely in the manufacture of articles, the demand for which is ephemeral.

It appears to me, and I hope I am correct in my conclusion, that our jewelers are realizing this fact, and are working steadily at such orders as they have, without so much complaining that they have not more. If trade is not brisk all around, there is steady activity in certain branches, and a more contented feeling generally. Diamond mounters are fairly well occupied, while ring makers generally have plenty of orders, especially the cheaper grades. If one branch of the ring trade is better off than another at present, it is the wedding ring department. They are now making up for the time lost while the question of drawback was under consideration. It is well known that many manufacturers of wedding rings were opposed to the remission of the duty, but they now see the advantage they derived from it. That there will be increased competition in this branch is certain, the effect of this will be that those who make a good article will have the good trade, but to secure this it will be necessary that makers carefully identify themselves with their productions by means of their trade marks, or better still, by their names.

Things are lively in the watch trade. If the business done is not so great as to call for special satisfaction, the amount of talk about the ever-increasing methods of doing it calls for some notice. It would be difficult to describe the present position of our watch making industry in a few words. The truth is the trade is still to a great extent in a state of transition. There are firms who adhere to the old lines of handwork, but mostly there is a disposition to resort to mechanism as much as possible. There seems to be a search on the part of some makers for a system that shall combine the advantage of all the other systems, and consequently supersede them all.

This is not likely to be found and there is no reason why it should be. There are advantages in the variety of systems that it would not be well to lose, even if it was possible to work them together. What can be done by each of the methods of watch production will soon be ascertained, for companies are formed, or are in course of formation, for putting them all into practice. I do no think that the formation of companies for the supply of particular watch movements, or of watch cases only, is likely to find much favor here. It does not seem to accord with our notions to buy parts separately all around. That parts can be produced far more rapidly mechanically than by the old system cannot be denied, and if the skilled workman, who have been accustomed to produce those parts by hand labor are given the control of the mechanism for producing them automatically, there will be greater hope for the permanency of the innovation. The truth has at length come home to our manufacturers, that people want cheap watches, they want timekeepers that can be depended upon for all ordinary purposes, but the element of price must be regarded. Our retailers used to be able to say to their customers, "if you want the better class English made watch, you must pay the higher price." I think this has been the great mistake of our makers. While they have justly prided themselves on the excellency of their productions, they have not sufficiently regarded the ever-increasing requirements of the constantly increasing millions, and have allowed foreigners to get hold of a trade that might well have been kept at home. It has been, and is, with watches, as it is with clothing, with amusements and with food, the greatest demand is for those of medium and lower prices. Cheap, yet good watches are wanted. These have come to us in their thousands from America, and the effect is that we shall soon have in London, Prescot and Coventry factories for the production of these too long despised conveniences. There was a time, and not so very long ago either, when British watchmakers practically supplied the markets of the world. Circumstances have so changed that they can only take part in a sharp competition for supplying their own markets.

One of our manufacturing houses, C. Timings & Son, have bought out a unique and attractive novelty in the shape of a combination



COMBINATION PURSE AND COMPASS.

sovereign purse and compass. The appropriateness of the latter addition to the ordinary sovereign purse, is at once obvious, and will undoubtedly cause the article to become very popular. The novelty is made of aluminium and "Aftean" silver.

The makers of studs and solitaires are well occupied. There are many varieties of the latter introduced, but I cannot honestly say I have seen any better than the popular West's patent. As we dress now, studs, pins and solitaires are more articles of necessity than of ornament, and are consequently in more regular demand. The ladies are using small double-pronged pins for their hair just now, but whether these are to be classed as articles of necessity or ornament I cannot quite decide. They are stuck into the hair at opposite sides, somewhat in the manner in which the long pins were used. There are some pretty designs for the head, nicely chased. (I allude to the head of the pins, not those of the fair wearers.)

I have just seen a novelty (to me at least) in the form of a bangle. It is specially designed as a symbolical offering for a young gentleman to present to his betrothed. A little golden heart is slung on a thin gold wire, wish the entwined initials of the couple artistically worked out in precious stones. There is a very minature key, also ornamented with jewels that form the initials. The jeweled key, of course, opens the heart, (how often and how easily do jewels gain access to hearts?) and disclose a space in which the lady can place her lover's portrait or lock of hair. As I am writing for a trade journal, and as my readers are probably hard-hearted men, I may mention that the construction of this beautiful heart is such that the contents may be *changed* easily. This might be regarded as an advantage of the intending wearer, but it will not be safe to point it out to her as such.

I have just returned from Edinburgh, where I have been visiting the exhibition. You will probably hear something of this from other sources, though there is not very much that is specially new in our line. If you have no other particulars of it I will give you a few when I revisit it in the autumn. Varying accounts are given of the value of the jewels belonging to the Duke and Duchess of Edinburgh, stolen from their hotel during the opening of the exhibition. I have no reliable information on this point, but the belief is that the loss is a heavier one than was at first announced. I was induced to mention my visit to Edinburgh by my remembrance of the decorations, or rather the ornaments, I noticed worn by the ladies there. The days were exceptionally fine and warm, and altho' only the end of May, there was quite a summer-like appearance. Silver and steel appendages seemed to be in favor for outdoor wear. This description of—jewelry?—was to be seen in many original arrangements for indoor and outdoor use. Brooches and bangles and chatelaine ornaments of silver and steel were more plentiful than I had seen elsewhere. I was much interested in the pleasing variety of "Scotch made jewelry." Perhaps this would be more correctly described as jewelry set with Stotch stones. There is a plentiful display of brooches of this character, but I could not help noticing that the majority of ladies wearing them did not appear to be Scotch. The presentation of marriage gifts is a great feature in Scottish customs. The retail jewelers of Glasgow and Edingurgh make regular provision for this, their best customers being visitors from the provinces.

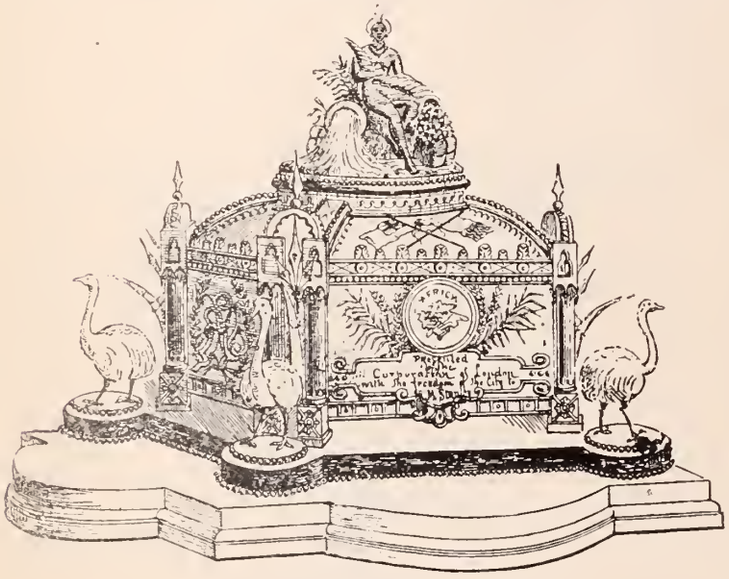
The fashion of wearing snake-rings is certainly reviving and many silver ones are to be seen.

The gold and silver plate duties are still matters of comment. The abolition of these is regarded by many as one of the best points in the Budget of the Chancellor of the Exchequer, and as calculated to give an increased stimulus to trade and to afford much needed encouragement to art. The many efforts that have been made to revive the silversmiths' art have not succeeded to any great extent, the reason generally assigned being the depressing effects of the duty.

Although the plate duties have been removed compulsory, Hall-marking has not been altogether abolished. We have still the anomaly that in this country Hall-marking is partly voluntary and partly compulsory. I have already given your readers particulars of this regulation that wants regulating. Our traders are not wishfu to get rid of Hall-marking. What we want is to have the matter equitably settled under a voluntary system, and there is no reason why this cannot be done.

Since my return to London I have been favored with an inspection of the casket presented to Mr. H. M. Stanley by the corporation of the city of London. It stands on a base of Algerian onyx, surmounted by an ebony plinth with rounded projecting corners. At each corner there is an ostrich carved in ivory. Curving slightly

over each bird is a an elephant's tusk looped to three spears, fixed in the panelled angle of the casket. The panels and roof are in ivory overlaid with ornamental work in variously colored fine gold work. The back panel has the city arms emblazoned in their heraldic colors: one of the end panels has the tri-colored monogram, H. M. S., surrounded by a wreath, emblematic of vicitory. The other end panel contains the monogram of the Lord Mayor of London. On the front panel, which forms the door of the casket,



CASKET TO HENRY M. STANLEY.

there is a miniature map of Africa over the tablet which is inscribed, "Presented by the Corporation of the City of London, with the Freedom of the City, to Henry Morton Stanley." Over the front and back panels on the roof are the standards of Great Britain and America, linked together. There is an oval platform at the top of the casket, on which is an allegorical figure of the Congo Free State, holding the horn of plenty, which is overflowing with native products. The casket was designed by Messrs. Geo. Edward & Sons, of The Poultry, London, E. C. VIGILANT.

Beautiful Art Work in Onyx.

UNTIL within recent years the working of marble and onyx was almost entirely associated in the minds of most people with sad recollections. But the industry in its relation to the jewelry trade and to the interior decoration of our richest private and public buildings, has assumed a new and high position in the fine arts. One of the most notable examples of the latter application is the rich marble and Mexican onyx decorations, which adorn the main hotel, office and reception rooms, in the new Chicago Auditorium, a structure which comprises in one building, the largest opera house in existence, a hotel and an office building.

On entering the main office, the scene disclosed by the numerous electric lights is almost overpowering in its beauty. Walls of the choicest Mexican onyx enclose a hall of grand size and height; massive Sienna columns support the ceiling, while the marble staircases, reception and reading rooms and entrances to elevators all adorned with the same beautiful onyx, enhance the first impression. The hotel clerk courteously receives the guests at a counter constructed of the finest Salina onyx, fit for the throne of a Montezuma. A beautiful structure whose outer and inner walls, counters and windows are built of choice Reforma onyx slabs, seemingly the abode of fairy shopkeepers, is used for the ticket office and news stand. The letter box is a veritable jewel casket of Mexican onyx; the alcove for the typewriter, the room for checking parcels, even the enclosures for the hall boys and porters are enclosed by wainscots of gleaming variegated onyx. The marble staircase whose wainscot and walls are adorned with selected onyx panels of unique and beautiful markings leads from the main hall to the parlors and rooms above.

The contract for this beautiful material, amounting to many thousands of dollars was awarded, by the architect, to S. Klaber & Co., 47 West 42d street, New York, on account of the reputation that firm had acquired in works of a similar character, such as the Senate Chamber at Albany, and because they were the only house who had in their possession a sufficient quantity of the raw Mexican onyx above specified, which they had imported directly from the quarries, when their senior visited Mexico. The quarries that produce this particular class of onyx are apparently exhausted, and it is doubtful whether large blocks of equal beauty will ever be produced for a work of such magnitude as the Auditorium. S. Klaber & Co. have for over eight years worked this material into pedestals, tables, cabinets, lamps and clocks, and have an unlimited amount of the material in the sizes required for this kind of work. They have recently enlarged their warerooms to display what may be termed the jewels of Mexican onyx. These productions have been used by the leading dealers in jewelry and fine arts as a ornamental and profitable branch of their stock, and it would be advantageous for dealers in that class of goods to visit their warerooms, where they may obtain a few valuable hints in the displaying of art goods to the best advantage.

Compliments of the Month.

So. Norwalk, Conn., June 5, 1890.

Can't get along without it. HOMER B. HOYT.

Kansas City, Mo., June 7, 1890.

I hope you will never get a reason for not sending THE CIRCULAR to me for I think it is the best of any. F. W. MEYER

Waltham, Mass., June 16, 1890.

Jewelers' Circular Publishing Co.

Gentlemen:—Since advertising my horological school in yours and other journals in the trade. I have received from 150 to 200 letters of inquiry per month, many of which refer to your journal. I am glad to state this fact for publication as I feel more than repaid for my trifling investment with you. Yours truly,

D. D. PALMER.

Rochester, Ind., June 9, 1890.

I have always admired THE CIRCULAR.

OSCAR R. DECKER.

Frasersville, P. Q., June 16, 1890.

June number of THE CIRCULAR has not reached me yet. As I do not wish to miss one single copy—THE CIRCULAR being a too well-informed friend to me—will you kindly see to have it sent.

J. A. SAVARD.

Amsterdam, N. Y., May 3, 1890.

THE CIRCULAR has been very valuable to me for the last three years, the time I have taken it. W. E. CROSS.

New York, June 10, 1890.

To the Editor of the Jewelers' Circular.

Gentlemen:—It gives us pleasure to add our testimony to the value of your journal as an advertising medium. The results of our single advertisement in your May issue were most encouraging. We received nearly thirty inquiries from it, and have already taken some good orders on the strength of it. Hoping to resume our previous profitable relations with you, we are,

Yours sincerely, PICTORIAL LEAGUE,

W. S. BACHELLER.

Neglected Problems.*

No. 2.—Part II.

WHEEL AND PINION GEARING AS LEVERS TRANSMITTING POWER.

By "Excelsior."

(*Continued from January* Circular, *page 40.*)

In the last article we got a general idea of what is meant by *force*, *energy*, *work*, etc., as scientific terms. We also found that a certain amount of energy will do a certain equivalent amount of work in various ways: it will lift a certain weight or overcome a certain resistance, or it will produce a certain amount of heat, or of electric current, etc.; that friction is a sort of negative force, a resistance which requires a certain amount of energy to overcome it; that the said energy is converted into heat and wasted, and the amount of this waste can be measured or calculated, etc. Our present purpose is not to measure this loss, but to study the mechanical laws which govern the transmission of energy by wheel and pinion gearing. We will, therefore, in this article disregard the matter of friction and other resistances and imperfections, and consider what the action of a perfect gearing would be.

THE EVOLUTION OF THE WHEEL AND PINION.

Gearing operates according to the law of levers; but a simple lever, as shown in mechanical books, is not at all adapted for horological purposes. Fig. 2 is the usual representation of it, and

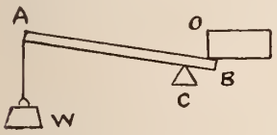


Fig. 2.

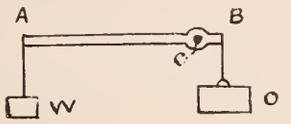


Fig. 3.

consists of a bar A B, resting on a sharp edge or *fulcrum* C. The parts on each side of C are called the *arms* of the lever, and its *power* is governed by the lengths of the arms. For instance, if the arm from A to C is four times as long as that from B to C, then a weight or pressure W, applied at A, will lift four times that weight at B, as shown by O. The power of this lever is therefore as 4 to 1, and so of any other lengths. The law is this: *The power is to the weight in the inverse ratio of the length of the arms.* In the above case, the lengths of the power arm and the weight or resistance arm are in the ratio of 4 to 1, and the power W is to the weight O in the (inverse or reverse) ratio of 1 to 4. The *power-arm* is the one to which the power is applied, whether the force be that of a weight, a spring, or anything else. The *resistance-arm* is the one which gives out the force or power received by the power-arm and performs *work*, as by revolving another wheel, moving another lever, lifting a weight, etc.

It should be observed, however, that although the power lifts four times its own weight, as shown in Fig. 2, it only lifts it through one-fourth the distance that it traverses to do it, and the gain in weight is balanced by the loss in space traveled over. The law for calculating the space or velocity is the reverse of that for the power and is: *The velocity of the two arms of the lever is in the ratio of their lengths.* In the foregoing case, the velocity of the resistance arm B would be to that of the power arm A in the ratio of 1 to 4, *i.e.*, it would be only one-fourth as great.

For horological uses, a journal or pivot replaces the sharp edge as a fulcrum, as shown in Fig. 3, where C is the pivot, W is the power, and O the weight or resistance. If a pivot or journal is well fitted in its bearing, the center of motion will be at the center of the pivot, the same as if the lever rested on a sharp edge there, as in Fig. 2.

It is evident that after a lever had moved a short distance it would slip off the weight or pass out of reach (see Fig. 2), and there would be an end to the action. For a continuous motion we must have some means of repeating the action of the lever, and that is what a gearing does. A wheel or a pinion is a series of levers, all having the same fulcrum or axis, and so arranged that after one lever has passed through its full arc of motion the next lever is acted upon by the same force and in the same direction as the former, then a third lever is moved in like manner, and so on, until the first lever comes around in position to act again, and the foregoing series of movements is repeated. In this way we get a continuous driving or impelling motion in the same direction. The series or circle of long arms is called a wheel, and the short arms of the series of levers form the pinion.

Fig. 4 represents how this idea might have first assumed form. The short arms are bent up or arranged in a different plane, *i.e.*, at a different level from the long ones, in order to avoid interference

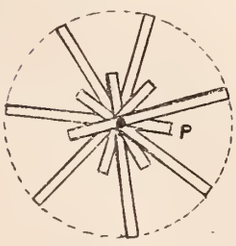


Fig. 4.

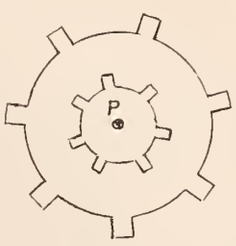


Fig. 5.

Fig. 6.

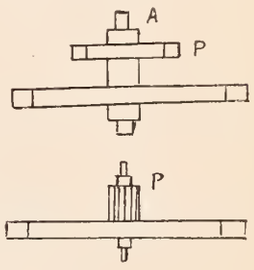


Fig. 7.

in working. And in practice, instead of separate levers being connected together, a solid disk of metal is fixed on the axis common to all of the levers; and only a short section of each lever, sufficient for the actual working, is cut out of the edge of the disk, somewhat as shown in Fig. 5, only the levers are more numerous. Fig. 6 is a side or transverse view, showing the wheel and the pinion P at different levels, and mounted on the axle or arbor A.

The next step is to arrange these working ends of the levers at convenient and uniform distances apart, and to give them such form as will operate best and with least friction; and the ends of the long arms are then called teeth, and those of the short ones pinion leaves. Although wheels are generally made in disk form, as stated, pinions are more often solid metal cylinders, having the leaves formed in their external surface. And in watches, the pinions are generally formed on the same piece of metal which constitutes the axis or fulcrum of the series of levers, as in Fig. 7, which may represent our complete wheel and pinion, in transverse view.

A WHEEL AND PINION COMPARED WITH A LEVER.

If the long arm (wheel tooth) and the short arm (pinion leaf) which are in action at the same time, which therefore constitute the lever, were on opposite sides of the fulcrum, the analogy between a wheel and pinion and a lever would be plainly seen. They are seldom so arranged in actual practice, but occupy any relative positions which are required by the necessities of each case. The principle of the action is the same, however, and the relative powers of the long and short arms are calculated from their respective lengths, precisely as if they were both situated in a straight line passing through the fulcrum or axis. Figs. 8 to 13 will illustrate this. In Fig. 8, S is a spiral spring, having one end connected to a beam E; to the other end is attached a cord running over a pulley V and supporting a weight W. It is evident that the spring S will be more or less elongated by W, in proportion to the weight of the latter. By taking care to avoid friction at the pulley V, it is found that this elongation will be the same, no matter what may be the angle between the two portions of the cord, W V and E V—whether they are close together, as in Fig. 8, or more distant, as in Fig. 9, or in a straight line as in Fig. 10, where S is suspended from the beam E. This shows that when a pulley is used the relative directions of the power and the weight from the fulcrum and from each other do not affect the amount of the power transmitted.

The same is true in the case of levers. In Fig. 3 the power-arm and the weight-arm are in a straight line passing through the fulcrum

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C. In Fig. 11 they are at a right angle, B being on one side of C. In Fig. 12 B is on the other side of C; while in Fig. 13 the weight-arm B is *between* the power W and the fulcrum C. Yet, if the lengths of the arms are the same in each case, the power W will lift the same weight O, showing that the relative directions of the two lever-arms does not affect the power. But a practical objection to an oblique arrangement of the lever-arms is that, at some angles, there

Fig. 8. Fig. 9 Fig. 10.

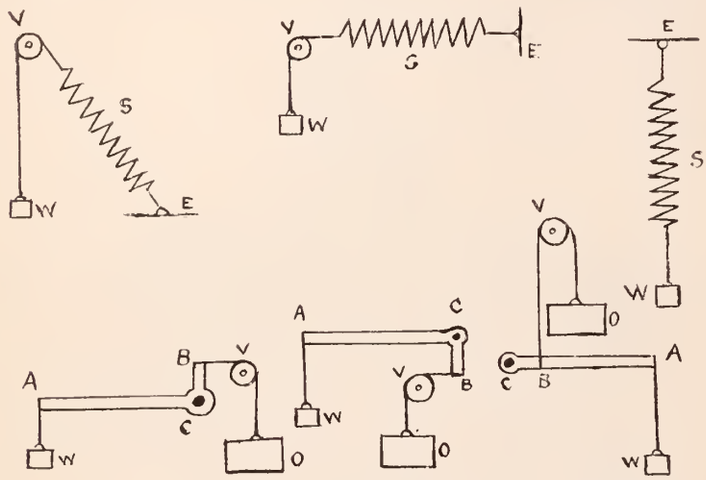


Fig. 11. Fig. 12. Fig 13.

is liable to be an excessive pressure and friction brought upon the pivots. And this fault is greater when the acting teeth and pinion leaves vary much in level. An example of this is found in the long third-wheel pinion of many watches, when the wheel is on one end of the pinion arbor and the acting part of the pinion leaf is near the other end.

SOME CHARACTERISTICS OF GEARINGS.

In mechanical treatises generally, the power is represented as applied at the end of the long arm, and given out by the short arm of the lever. Horological trains are arranged just the reverse of this: The power is applied to the short arm (pinion leaf) and delivered at the end of the long arm (tooth of the wheel), which acts upon the next pinion leaf. This renders it rather awkward for the watchmaker to apply the statements and explanations to horological work, where the calculation of gearing is one of a constant *reduction* of the original force applied, balanced by a corresponding increase of velocity or distance travelled over. For instance, the main wheel of a watch moves with a certain force and velocity. It drives the center wheel say eight times as fast, but the force given out by a tooth of that wheel is only one-eighth as great as that given out by a main wheel tooth. But, as it moves eight times as fast, what is lost in force is gained in velocity, and the power given out by it is just as great as that given out by the main wheel. It will be remembered that we leave out of consideration, in this article, the losses by friction, etc. In the same way, the fourth wheel moves sixty times as fast and makes sixty times as many revolutions as the center wheel, but it gives out only one-sixtieth as much energy. As the product of the force into the velocity is the same for this wheel as the similar product for the center wheel, it follows that the fourth wheel does as much work as that does.

Strange as it may seem to those who have never thought of it, the escape wheel, which you can stop with a hair, gives out as much power and does as much work as the main wheel, which you can hardly hold with your finger. Another very common but erroneous idea is that the power of the mainspring is distributed through the train, and that some of it is situated in each wheel and pinion—most of it being in the main wheel, less in the center wheel, and so on, diminishing down to the escape wheel, which contains very little of the power. It will now be easy to see why this idea is incorrect, because in fact the power exerted by the mainspring is at once transmitted through the train to the escapement and there given out to the balance. The train does not hold or contain power, it simply receives power at one end and transmits it through to the other end, just as a rope would do.

NO WORK DONE WITHOUT MOTION.

At each instant, therefore, the mainspring is acting upon the balance. In the case of a lever watch, when the lever has given its impulse to the balance and become locked, the entire train stops, and the mainspring ceases to give out power. No work is done in any mechanical contrivance except while there is actual motion. No matter how strong the spring or how heavy the weight, it does no work except while the train moves. When that stops, the work stops. The weight or spring still contains energy, ready to act but not acting, and it is called *potential energy*, or energy available for use or with power to do work. It is also defined as energy of position as in this case the energy is due to the position of the weight or spring, *i.e.*, being wound up.

POWER, WORK, ETC.

Now let us consider the foregoing more closely, and in more scientific phraseology. *Force* or *energy*, from whatever source it may be derived, is what does work.

The *weight* of a body, when that term denotes a force, is the force exerted on it by gravity, and which it in turn can exert upon a piece of mechanism. A weight of two pounds therefore means the force exerted by gravity on two pounds of matter.

The force of a spring is due to its elasticity of flexure, *i.e.*, the effort of the steel, after being bent, to return to its original position when left to itself.

Space may be either length or distance, as in measuring the *length* of the lever-arms, or the *distance* through which the ends of the lever move.

As explained in a previous article, mechanical *work* implies three factors or components: a body of a certain *weight*, moved over a certain *space* or distance, in a certain *time*, and it is expressed by the product of the number of units of weight, of space, and of time, multiplied into each other. In place of the first factor above named, the weight, we may substitute the amount of force or energy which is capable of lifting a certain weight.

In the case of a weight, the work done would be computed by multiplying the weight, expressed in pounds or grains, the distance through which it falls in a given time, say one second, and the number of seconds that it continued to give out power at that rate. That is, ignoring friction, etc., the power it gives out in falling, or which is required for winding it up, would be the power that it exerts in the mechanism.

In the case of a spring, the power or force is compared to weights, and the work it can perform is the product of the weight it can lift, the distance it can lift it per second, and the number of seconds it can continue to do that. In a watch, the power of a spring would be the number of grains weight, suspended at the end of the pitch diameter of the main wheel, that it could lift, and the space through which it could lift that weight per second, multiplied together. This power, expressed in inch-grains (see previous article), multiplied by the number of seconds it was given out, would be the work that spring is capable of doing in the watch. Unlike a weight, the power of a spring is constantly changing, and we understand by that term the mean number of grains it can lift one inch per second, *i.e.*, the average or mean between the number it can lift when first wound up, and when run down. The average or mean strength of a spring is a little difficult to measure in practice. As we have nothing to do with that, but only with the laws of the transmission of power, we will suppose that at any given moment the power of the spring is represented by the number 360.

We will next proceed to discuss the calculations of gearing, power and velocity, and the combination of levers, after which we will be ready to proceed to more difficult matters.

(*To be continued.*)

Fashions in Jewelry

A Lady's Rambles Among the Jewelers.

WARM WEATHER AND THE WEARING OF JEWELRY.

THE fashion, and this is probably due to the warm weather which makes even the semblance of anything heavy seem oppressive, is for light, flexible and cool looking jewelry. A heavy massive bracelet is seldom seen since the thermometer has begun to climb upward. But equal weight is borne cheerfully in any number from three to a dozen of light slender bracelets. These have a cooler effect, and are in better keeping with summer toilets. Among wider bracelets the preference is manifestly for the open woven wire bracelets, which are both pretty and becoming.

*** *** ***

THE rage for gems was never greater than at present, and the daughters of America are to the fore. At some recent entertainments given abroad, the Americans were conspicuous for their gems, and attracted especial attention by wearing some of those formerly belonging to the French crown. One lady is described as having her skirt looped up with diamond-studded chains, and tassels which once formed part of the regalia of Isabella of Spain.

*** *** ***

ONE of the most beautiful necklaces now on exhibition is composed of two rows of diamonds set in gold, from which swing fine gold chain festoons in alternate lengths—long and short—from each of which depends a pale blue sapphire. Another necklace is conspicuous for its design ; in this a floral garland is caught up in a rosette at one side from which depend strings of diamonds. Still another diamond necklace is a straight band made up of floral forms, in which very large diamonds make the principal part of each leaf and petal.

*** *** ***

BEAUTIFUL pearls are the most distinguished of all the precious things shown. A very fine necklace is made up of sectional pieces in each of which is a large pearl surrounded by diamonds ; in the pendants and clasps are separate pearls of such size and purity, that any one of them would be a coveted object. Large pear-shaped pearls are sought after for pendants. Such a one is swung like a bell, surmounted by a bow knot in diamonds. A false pearl almost the size of a pigeon's egg is mounted as a hair pin, and held up by wreaths of diamonds.

*** *** ***

A SQUARE-CUT opal makes the centre of an antique brooch, by surrounding it with flowering forms in diamonds having an emerald placed at various points of intersection. The color effect is beautiful.

*** *** ***

SQUARE buckles set with rows of diamonds and pearls are designed for velvet throat ribbons.

*** *** ***

IN artistic jewelry a crescent of white onyx with flying loves carrying garlands cut in relief, is set in a narrow rim of diamonds. At the upper edge there is a little cluster of diamond butterflies.

*** *** ***

THE most ingenious adaptation of jewelry to different ends is shown. A bracelet composed of numerous strands of fine gold and clasped with diamonds, rubies and pearls, can be converted into necklace with the clasps as a pendant.

SOMETHING has been said before of the introduction of rock crystal into jewelry. This innovation gains in favor. They are used chiefly as pendants, and swing like crystalized tears from fine yellow gold chains.

*** *** ***

SOME barbaric daggers for the hair are among the newest pieces of jewelry. They are of yellow gold with tasty but appropriate gold beaters' work, and in the gold are sunk large yellow topazes, ruby spinelles and beryls.

*** *** ***

A LUCKY scarf pin is a three-leaved clover in white enamel pierced by a horse shoe in diamonds with ruby nails.

*** *** ***

A CURIOUS pear-shaped watch attached to a chatelaine has covers of mottled red enamel that opens like butterfly's wings with diamond spots.

*** *** ***

BULGARIAN girdles are among the new importations. They consist of silver gilt chains fastened by huge filagree buttons or rather rosettes of silver gilt net with smaller circlets of pearl. Other girdles are stained in dark metallic hues, and likewise ornamented with pearls.

*** *** ***

A CURIOUS Indian necklace has been on exhibition and sale. It is made up of flat tablets of what looks like lead-colored onyx. On this is a floral-incised ornament in gold, and set with colored stones simulating blossoms.

*** *** ***

CRYSTAL hearts are used in mourning. They have an inner band of black enamel and an outer band of diamonds.

*** *** ***

PANSIES in dead lustreless finish with their crumpled outlines faintly defined in gold, are used as brooches in mourning.

*** *** ***

MARQUISE rings are still preferred by women. Diamonds surrounding a ruby, sapphire or opal are the favorites.

*** *** ***

GOLD palettes with precious stones set around the edges to imitate paints are among the novelties. Some have brushes and mahlstick stuck through the thumb-hole and lying flat.

*** *** ***

FANCY a bee-hive with diamond bees hovering outside, and gold chicken coops with a black hen showing, used as brooches.

*** *** ***

TINY screw earrings are affected by young women. Small moonstones set diamond-wise with tiny rubies, turquoises or diamonds are worn. Sometimes two tiny stones only are used, such as turquoise and diamond, ruby and diamond.

*** *** ***

SIDE combs for the hair are deeper at one end than the other This inequality is either in the comb or the mounting. In the latter case the ornament is deeper at one end. A pretty ornament for a side comb consists of small open forms of gold, separated by diamonds, or by three enamelled flowers, such as forget-me-nots, separated by diamonds.

Beautiful souvenirs are found in seals of rock crystal mounted in gold and adorned with gold garlands.

*** *** ***

A magnificent hair-pin is of waving-rayed gold with a round centre in which two diamond eyes, a diamond nose and diamond mouth indicate the sun god's face.

*** *** ***

Round Renaissance brooches are holding their own. The cabochon rubies, sapphires and moonstones add to their attractiveness.

*** *** ***

Tortoise shell sets for the writing table consist of paper knife, pen, pencil and ink eraser. These are mounted and adorned in gold, the latter being used in flnely worked garlands and scrolls.

*** *** ***

A reminiscence of the Centennial Exhibition is a watch shown in a jeweler's window, which is an inch and a quarter thick, three inches across the face, and weighing nine ounces. Another big thing recently brought to notice is a clock which is nearly nine feet in circumference, and almost in size approaches a steeple clock.

Novelties in Silver.

Silver jewelry increases is fashion as the days grow warmer. There is scarcely any part of the toilet which cannot find some use for it. In the one matter of buckles it is of wide service, while silver pins are almost indispensable. Silver bangles are worn more than ever, the pretty slender spirals being the favorite. Coins and charms are much in vogue, and numerous band ornaments are preferred by many.

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A silver whip with a long knotted lash is used as a belt pin.

*** *** ***

Silver hair pins are much worn, the favorite forms being knotted and looped at the head.

*** *** ***

Tea services in the favorite spiral forms with no other ornamentation, hold the favor of the moment.

*** *** ***

Standards for five o'clock tea kettles are made of oxydized silver alloys.

*** *** ***

Jardiniere stands are made to hold seven and eight porcelain pots made from plated silver.

*** *** ***

A pretty fashion for a round table mirror is to leave interstices, through which a colored ribbon of the hue that suits the complexion best may be passed.

*** *** ***

In the triple dressing room mirrors, the centre glass is usually square, and the outer glasses diamond shaped or round. In this case the mounting of the outer glasses is very simple, and usually consists of spiral bars.

*** *** ***

A silver lamp, which is new, has the standard like that of a candlestick, and supports a cut glass bowl. This holds the lamp which above has a dainty silk shade.

Silver jewel boxes are distinctly the fashion The prettiest have Grecian and Watteau figures in low relief, with etched backgrounds. They are oblong. Sometimes they are divided, have two covers, and unlock at each end. Glove boxes and handkerchief boxes of silver have bands of repoussé work, and the object of the box engraved on the top.

*** *** ***

Silver cheese holders are desirable for table use. They have handles like a chafing dish, and arms to enclose a round chedder cheese.

*** *** ***

Small pear-shaped silver articles with spiral ornament, are alcohol lamps, and are as convenient as they are pretty.

*** *** ***

Silver holders for wine bottles, that the temperature may not be disturbed by the heat of the hand, are among the new things which it is nice to have handy.

*** *** ***

A vine-wreathed carriage is designed to pass the Burgundy.

*** *** ***

Wine corks are surmounted by various devices in silver, such as dancing bears, stag's head, a triumphant rooster or monkey.

*** *** ***

Silver scollop shells, and individual dishes for entrees, are in new designs, the most conspicious of which is a tortoise.

*** *** ***

Silver scoops for sugar please the housewives.

*** *** ***

Triangular pen wipers of chamois and colored cloths, are held at the apex by silver handles, which expand in foliations for the depth of two inches on to the cloth.

*** *** ***

Low candelabra with twisted arms seem to be preferred.

*** *** ***

Boxes of fancy woods for cigars are mounted in silver, which at the corners is carried into graceful garlands. Toilet boxes are ornamented in the same manner.

*** *** ***

Fine combs for babies are mounted on silver handles.

*** *** ***

Rests for carvers are gotten up in fanciful designs; one has the bar on the backs of two tortoises; another carries it between stags' horns, a third shows it held in the mouths of two dogs.

*** *** ***

Silver clasps are made to hold up men's shirt sleeves.

*** *** ***

Bon-bon boxes of silver filagree are dainty trifles.

*** *** ***

Tooth brushes are mounted in silver repoussé work.

*** *** ***

Black enamel match boxes with tiny ornaments showing in the silver beneath, are new and pretty.

Silver flasks in imitation of wicker work are appropiate. Others are engraved with scenes from the base ball field.

*** *** ***

Superb pistols have the holsters of smoked ivory carved in Moorish forms, and silver damasceened mounts.

*** *** ***

Cups in silver gilt imitating sheaves of wheat, come in sets of two with spoons to match, as bridal presents.

*** *** ***

Pin cushions set in tall coasters, oxydized and with indentations to give them the appearance of battered old silver, indicate the favor with which old silver is received.

Bric-a-Brac, Art Pottery and Novelties.

Fans, fans, fans! And that they shall be as summery as possible, they are made of painted gauze. The work is exquisite consisting of Cupids, goddesses, nymphs, shepherdesses, fine ladies and garlands.

*** *** ***

The mounts are superb. Sandal and violet are the two fragrant woods used. These are carved in exquisite forms, garlands and lattice work, inlaid with gold. Others have a long serpentine form in relief, sparkling with copper-lined inlays. Another shows through perforations, metallic blue inlays, which suggest a moonlit sky. Others have inlays of steel in graceful forms. These flash as the fan sways to and fro with lovely effect.

*** *** ***

Pearl mounts are formed like long graceful columns twisted with garlands, and sparkle with inlays of gold and silver. These fans are so fragile that the sticks are carried here and there to the top. Ostrich and marabou feathers are magnificent but a little clumsy, except for effect as a toilet accessory.

*** *** ***

Orchids simulated in paper and admirably imitating these wonderful things, both in form and color, are used for dinner cards.

*** *** ***

Paper pulp, which looks like frozen or petrified foam, is cut into layers, painted in garlands and used as dinner cards.

*** *** ***

Manicure trays and implements in smoked ivory have been introduced.

*** *** ***

Russian belts, a sort of glorified rainbow-hued gold tape, are introduced and are worn with gorgeous Russian enameled silver buckles.

*** *** ***

The briarwood pipe, celebrated in story and in song, is the pipe of the hour and comes in numerous forms. The frequent portrait of the late Emperor Frederick seems to show that the carving is done in Germany. A favorite bowl has a thorny aspect. Some of the forms are fanciful, such as dancing bears, or a child seated in an upturned umbrella.

*** *** ***

Umbrellas and parasols almost rank as works of art. The imitations of silver in cheap umbrellas have not discouraged the use of the real metal, which is more popular and more artistic every season.

*** *** ***

The golden rod is vindicating its right to be considered the national flower by appearing conspicuously in great golden bunches on fans of black gauze, and makes a fine and sumptuous appearance.

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Sevres and Dresden plates, brass mounted, are used as background for branching side lights, or *appliqués*, as they are called in France.

*** *** ***

Imitations of old blue Dreft ware are introduced for country houses. They appear in such forms as wall jardinieres—that is to say with flat backs. Sometimes these are basket-shaped, and are very pretty. Blue Dreft bird cages are another pretty fancy. Candlesticks are built up of sections of blue Dreft with brass mounts. There are also quaint pictures of old Dutch towns in this ware for halls.

*** *** ***

Kalecmonos are in demand for country house decoration. These are the Japanese oblong paintings on paper which take the place of oil and water-color paintings in our western world, and in their color and imitation of natural forms are worth all our admiration Many persons take these since they can be so easily rolled and carried in trunks with them to adorn their rooms in summer hotels and boarding-houses.

*** *** ***

Tablets for writing that can be carried in trunks are prepared for the summer sojourning by covering a slab of wood with baize or canton flannel, and fastening on pockets of the same material for paper, envelopes, postal cards and stamps with brass thumb tacks. They are very ingenious, and much more convenient than writing desks.

Elsie Bee.

EXTRAVAGANT.



He: We swells carry watches in our canes.

The Girls: That's nothing; we girls have clocks in our stockings

—*Brooklyn Life*

The Art of Enameling.

PART I.



WHEN an enameler lives at a convenient distance it is better to send your work to him; this, however, is not always possible, as these artisans are generally to be found only in large cities, and for obvious reasons, a certain piece of work requiring his assistance, cannot always be sent to him. In such cases, it is well if the country jeweler knows how to to help himself, and any intelligent workman will, by the exercise of a little common sense, soon attain the necessary skill. This article is intended to give him simple and practical instruction in the method.

Enamel is a glass which fuses at a lower degree of heat than the ordinary kind; it is manufactured in so many ways and of so many different compositions that to give all the formulæ would lengthen this article inordinately. The basis consists generally of silica (quartz powder or white sand), carbonate of soda and oxides of tin and lead, and the different colors are produced by metallic oxides; consequently enamels are of a metallic nature.

The colors of the enamel are liable to change on silver, and on copper they will generally turn bluish and greenish around the edge; to prevent this, a ground of white enamel is fused on first. The colors do not change on gold, and this metal is therefore suited best for the purpose; reddish gold is the handsomest of all alloys.

To prevent the chipping of the alloy, always prepare a fresh alloy of gold, to be of at least 14 *karats*. To prevent the chipping of the enamel on hollow articles, strengthen them from behind with so-called counter-enamel.

CLEANING THE SILICA.

The silica best suited for the basis (the frit or fritz) is colorless quartz (rock crystal), which is heated and thrown into water, to make it vitreous; it is next pulverized finely. If the operator desires to use white quartz sand, it must be cleansed first. This is done by pouring over it equal parts of hydrochloric acid and water; it is left to stand for several days and then washed with water ten to twenty times. In a test melting of a sample, with the other necessary ingredients, a pure white mass that shows no shade of green must result; if such is not the case the sand still contains traces of iron.

The sand may also be purified by mixing it with one-fourth of its weight of table salt, and glow-heating it in a plumbago crucible. The peroxide of iron present and the table salt decompose each other and form chloride of iron, which evaporates, while the soda enters into combination with the silica.

MAKING THE FRIT.

The glow-heated mass may, by mixing with red lead and smelting, be reduced at once into a frit, which represents a glass of lead, soda and silica. Take: Quartz sand, 100 parts; table salt, 25 parts; and smelt with red lead, 25 parts. The soda (carbonate of soda) used in enameling, must also be free from iron. The chalk used for the same purpose must be perfectly white; yellow spots betray the presence of peroxide of iron, and a product made with it would be useless.

PREPARING THE PEROXIDES OF TIN AND LEAD.

The white coloring substance in the base or frit is, as already stated, generally peroxide of tin, to which peroxide of lead is also added occasionally. This peroxide of tin is on a large scale generally prepared by smelting 2 parts tin and 1 part lead in a very flat porcelain dish over live coals, and heating the alloy beyond the point of fusion. This alloy will soon be coated with a white (yellow in heat) skin of peroxide, which is with a glass rod pushed to one side, when a new film is formed, and this is continued until all the metal has been oxidized. The oxide is then separated by washing it from the metallic parts. It is more advantageous, however, to do as follows: The tin and lead, reduced to small pieces, are treated in a porcelain dish with concentrated nitric acid; the metals are violently affected thereby, and evolve brown vapor; the lead is dissolved, while the tin is changed into a white powder—the peroxide of tin. Corrosion being finished (no more brown vapor must evolve, on the addition of nitric acid), the whole is slowly evaporated to dryness, and the white pieces of the mass are glow-heated in a crucible; the nitrate of lead dissociates and forms peroxide of lead, and in this manner a mixture of pure peroxide of tin and peroxide of lead is obtained. If the operator desires to produce peroxide of tin alone, he can treat the tin with nitric acid, and after the development of the brown vapor has ceased, heat the fluid to boiling,—finally obtaining the powder of the tin peroxide, which he dries.

Useful mixtures for the production of frit can be composed in in the following proportions:

I.

Tin (oxidized), 2 parts; lead (oxidized), 1 part. Of this mixture, 1 part melted with crystal glass, 2 parts and saltpeter, 0.1 part The saltpeter is for the purpose of converting any traces of very strongly (green) coloring protoxide of iron into the much less strongly (yellow) coloring peroxide of iron.

II.

Crystal glass, 30 parts; antimoniate of soda, 10 parts; saltpeter, 1 part. This frit contains no peroxide of tin.

The above specified substance, obtained by the smelting of table salt, quartz sand and orinium, is a colorless glass; in order to change it into white enameling mass, the weight of the glass of peroxide of tin is added. If a frit of an especially high coloring capacity is desired, the quantity of the tin is still increased 5, 10 or 20 per cent.

SMELTING THE FRIT.

In the melting of the frit, blistery lumps of an unequal color are obtained first; some places are highly transparent, while others are perfectly white, being charged with the peroxide. In order to correct this inequality, the substance is to be powdered and smelted; repeating this operation until the color is uniform. The greatest cleanliness is necessary in these various remeltings; neither ashes nor fire gases must in any manner be permitted to enter into the crucible, as the result would be a miscolored enamel.

By pouring the fusing mass of enamel in a thin stream into cold water, it will by the sudden cooling off become so brittle that it can be pulverized readily. As above stated, the enameling mass is to be fused repeatedly, until the color is perfectly uniform. Only when this is produced, it is pulverized as finely as possible, and by crushing reduced to an impalpable powder.

The frit produced by the above detailed formulæ is either used by itself or else as basis for certain other colors. In the former case it is frequently used as smelt for the manufacturer of watch dials or used on articles of copper, silver and gold, which receive thereby the appearance of porcelain. Beautiful specimens of art objects of this kind, especially bonbonnieres and jewelry boxes, were in the 17th century manufactured by French artists; they are still sought and purchased at high prices by collectors.

If the frit is to be smelted upon shell, silver or gold, it is necessary only to apply enough to just cover the metallic ground. When copper or bronze plates—and for larger enamel pictures copper is almost always used—are to be coated, a thicker coating of the frit is to be applied.

(*To be Continued.*)

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Mechanical Ocular Defects.

Their Nature, Cause, Correction and Relations to Functional Nervous Diseases.

Edited by C. A. Bucklin, A. M., M. D., New York.

[The aim of the author is to produce a clear and thoroughly practical course of instruction on the subject of "mechanical ocular defects," which is entirely void of useless technicalities and within the easy comprehension of every thinking student without his having had any previous technical or mathematical education.]

THE symptoms complained of with a given degree of hyperopia are so different and the amount of annoyance experienced varies so widely in degree, that considerable confusion exists on the subject of hyperopia. These variations occurring with the same degree of hyperopia have led to a classification of the different conditions which may exist in different individuals having the same degree of hyperopia.

First—We have *simple facultative hyperopia.* This term indicates that the hyperopia is easily compensated for by the accommodation for all distances and conditions, without the slightest annoyance or inconvenience to the patient, who is unconscious of the existence of his hyperopia. When hyperopia is discovered in this class of patients it is the result of an accidental examination, or they accidentally discover that they see distinctly at a distance through the convex-lenses which aged people use for reading. No person could do this without being strnogly hyperopic.

This class of persons experience no annoyance from their hyperopia; consequently they are rarely seen by opticians or specialists until from some cause the hyperopia passes out of the facultative stage. It is readily seen that this class alone could give no serious ground for disputes among authors.

Second—We have the non-facultative variety of hyperopia. This term indicates that the hyperopia is not compensated for by the accommodation at all times without annoying the patient. These persons are annoyed by the excessive demands made upon their accommodation for the purpose of covering their hyperopia. They seek relief from the optician or specialist, and readily accept convex lenses of sufficient strength to make them comfortable.

We have, therefore, as the two prominent divisions in the classification of hyperopia—*facultative hyperopia and non-facultative hyperopia.* We also have further qualifying terms as *latent hyperopia*, by which is indicated that portion of the hyperopia for which the individual cannot be induced to accept any convex lens. We have next the term *manifest hyperopia*, which indicates the amount of hyperopia for which the individual can be induced to accept a convex lens.

Hyperopia may be entirely latent, entirely manifest, or partially latent and partially manifest, and still be thoroughly facultative. By this we mean that although the individual has complete or partial control of his accommodation, being able to relax it sufficiently to accept the lens which entirely corrects his hyperopia, or a lens which partially corrects it. Still he has the necessary muscular power to use his eyes without fatiguing and without lenses.

Absolute hyperopia is another term used in the classification of symptoms under hyperopia. This term indicates that the accommodation is enabled to overcome the hyperopia at any time for any distance. These individuals can only have distinct retinal images formed on the retina by having the rays of light which enter the eye converging; consequently as there is no distance in the universe from which we can obtain converging rays of light, there is no point in the world at which one having absolute hyperopia can see distinctly without convex lenses, for they are the only means we possess of giving to rays of light any desired degree of convergence.

Persons having absolute hyperopia are frequently considered myopic because of their defective distant vision. They also hold objects very closely for reasons explained in the June number of The Circular, but they see very poorly compared with the myopic individual who holds objects closely owing to his moypia. Individuals having absolute hyperopia accept the necessary convex lenses quite as cheerfully as the myopic individual accepts his concave lenses, and they are even more grateful for the assistance they afford them than the myopic persons. The last mentioned class of individuals usually have one point at which they can see distinctly and comfortably without glasses while those having absolute hyperopia have no point where they can see distinctly without lenses.

Relative hyperopia is another term used in the classification of hyperopia symptoms. This term indicates that the individual has such a disturbance between the relations of fixation and accommodation that he can not accommodate for any point at which he can fix, nor can he fix at any point for which he can accommodate. This difficulty may exist for all distances or it may only be annoying at the working distance. It is certainly a most annoying and common symptom of hyperopia. The excessive demands made on the accommodation for the purpose of compensating for the hyperopia cause a disturbance between accommodation and fixation. There is a given degree of accommodation which takes place with each degree of fixation—and a given *increase* in accommodation with *increased* degree of fixation. An individual having relative hyperopia at any given distance finds himself in the following dilemma. He must see the object indistinctly, see the object double, learn to look cross-eyed—close one eye or obscure the line of vision of one eye by so holding the work that his nose obstructs the line of vision. Very many of those who suffer from relative hyperopia at the working distance resort to the above mentioned methods to overcome the annoyances they experience from trying to see with both eyes. Looking cross eyed is a very common method of overcoming these annoying symptoms.

All the annoying symptoms experienced under the various classes already mentioned, are readily relieved by the selection of proper lenses which the patients gladly will accept as soon as offered.

The classes of hyperopic cases which cause great trouble from weak vision, because they refuse to accept upon trial the very convex lenses which would relieve the symptoms complained of, if they were accepted. These cases are designated by the author as "*border cases.*" I mean that *they are* on the border between facultative and non-facultative hyperopia. During the short trial with convex lenses they use their accommodations powerfully and refuse the assistance of convex lenses. At night when they attempt to read for any time they soon become tired and sleepy. They can see distinctiy, but the continued effort to see soon produces painful fatigue of the ciliary or ocular muscles. For example, females having hyperopia, frequently suffer from asthenopia during each menstrual disturbance while others suffer from asthenopia during the entire period of lactation, and they suffer at no other time. This indicates that when in usual health their hyperopia is facultative, and when not in usual health it is not facultative. Persons frequently are seen who have facultative hyperopia after sleep and during the morning hours—but develop non-facultative hyperopia, in the afternoon as the result of slight fatigue.

The slightest failure in the general health will frequently carry one over the border of facultative hyperopia and cause asthenopic symptoms to develop. Any hyperopie under the full effects of atropine develops absolute hyperopia, which condition is more easily corrected than an equal degree of myopia.

Atropine is a necessity more or less frequently in proportion to the expertness and patience of the individual conducting the examination of the hyperopic eye. In all those cases in which a different degree of hyperopia can not be demonstrated by trial lenses or the ophthalmoscope to account for the asthenopic symptoms, atropine should be used.

Cases illustrating the above described conditions, as every prac-

tical man sees them, year after year, have been neatly arranged and published by Donders.

Facultative hyperopia is illustrated under the following head line: *Hyperopia does not always cause disturbance, and correction is then unecessrry.*

Case 1—An elegant lady, aged 22, under treatment for slight granulations. At a distance her vision is acute; with concave glasses it is not as good; with + $\frac{1}{24}$ it is as acute as it is without glasses, but unpleasantly larger; "men look like giants." (Donders concludes that there was hyperopia $\frac{1}{24}$ at least and that probably the entire hyperopia would have amounted under atropine to $\frac{1}{14}$.) Nevertheless she experienced no inconvenience. She was a person who read but little, and did no work with her eyes. Had she been obliged to do much close work, asthenopia would have been present. Indeed at the present time there was no indication for spectacles, which had they been employed would only have reduced her unusually powerful accommodation.

I wish to call the attention of my readers to some practical points which the above case suggests.

First the fact that an individual has $\frac{20}{20}$ of vision through a weak convex glass does not demonstrate that this is his amount of hyperopia. In exceptional cases the acuteness of vision may be far in excess of $\frac{20}{20}$, in which case the convex lens which may be used without reducing vision below $\frac{20}{20}$ is considerable. A slightly magnified object is seen even better by the emmetropic eye.

It takes a very skilled individual to judge of the difference between increased acuteness of vision and increase in the size of the object. The average individual will call the slight increase in the apparent size of an object an increase in the acuteness of vision. It is, therefore, only the slightly myopic eye that will absolutely reject *every* convex lens as detrimental to the acuteness of distant vision. It is also a question if an individual having hyperopia of $\frac{1}{14}$, who suffers from chronic conjunctivities does not suffer from a disease which is a direct consequence of the hyperopia.

The further consideration of hyperopia will be continued in our next.

CORRESPONDENCE.

Bradford, Pa., June 4, 1890.

DR. C. A. BUCKLIN:

Dear Sir—I wish to ask you a few questions in regard to a case which I am somewhat interested in. My brother's boy's (7 years old) sight is all right and has never had any trouble; but he has got so he winks his eyes all the time, and has no control over them. I think it is a nervous trouble. Can you tell me anything to do, and if a colored glass would be of any good, and what you think of the case? Hoping I shall hear from you soon in regard to this letter, I remain,

Yours truly, W. T. L.

Answer—In these cases, errors of refraction should be carefully corrected when present. A chronic irritation of the conjunction from a chronic nasal trouble, is also a cause. It exists in both sexes, but more frequently in boys at this age. Phimosis is also a common cause of this nervous condition. It usually passes away entirely by the 18th year, unless complicated by marked "phimosis." Not being complicated by any of the mentioned conditions, it usually passes away when the boy becomes a settled man, or the girl a settled woman. Sometimes it is very bad, and of the nature of "chorea," but uncomplicated as far as can be discovered; in such cases bromide in some form administered under the directions of an intelligent physician may be required. The entire trouble is a symptom of some nerve irritation, and is usually of no great importance, unless complicated by some decided error of refraction, or annoying phimosis. Either of these two last conditions should receive proper attention. The question is more frequently a medical than an optical one.

Potsdam, N. Y., June 4, 1890.

DR. C. A. BUCKLIN:

Dear Sir—In fitting Hy. under atropine, do you fit just the same as without the atropine. We had a young boy that could see about same with + 20 or + 30. I could give him perfect vision with either lens. I gave him + 20; he wouldn't accept any lens without the atropine. Was I all right in giving him the stronger number? I am having a big run on glasses. I have to spend about half my time in the opticial room. I had a case a few days ago (a young lady), who wouldn't accept anything but — 20 Cy., Ax. 180°, wouldn't take any + Cyl., and she had a pair of — Cyl. that appeared to fit her for distant vision, but her eyes bothered her for near work. After putting atropine in her eyes for three days, + 20 Cy., Ax. 90° was the only thing she would accept and couldn't see with — Cyl. I thought this a rather strange case. How do you explain this? Was it spasm of the ciliary muscles, owing to an irregular contraction of the fibres of ciliary muscle, or what was it? Yours, etc., J. T. B.

Answer—Up to No. 12 you give a full correction under atropine, be sure that the last lens is as "sharp" as the next two weaker numbers. Above $\frac{1}{10}$ you will usually give in people under thirty one dioptric less than the strongest + lens they will accept. From your report I do not think + $\frac{1}{20}$ was too strong.

The case of the young lady has nothing strange about it; by forcing her accommodation during the trial she deceived the examiner into giving — cylinders where + cylinders were required. It is an old story, with a little persuasion she could have been induced to accept + cylinders without atropia.

Trenton. N. J., June 5, '90.

C. A. BUCKLIN, A. M., M. D.:

Dear Sir—Child aged six years, showed symptoms of strabismus (convergent), upon examination with the ophthalmoscope, hyperopia of + 8 D. was shown R. and L.; gave + 2 5 D., and at the end of six months changed them to + 3.25 D.; + 4. D. makes things look hazy to her, but I observe that there was still strabismus while reading, but none for distance with + 3.25 D.

No astigmatism. R + 3.25 gives 20/25 normal V.
L + no lens appreciably improves.

Would it be advisable to give a strong + for constant use, and will it keep eyes straight? The left eye has evidently never converged, for any length of time, yet the vision is poor. Why is that?

Would be pleased to hear from you if time allows, either by mail or CIRCULAR for July. Respectfully, G. F. A.

Answer—It is a case of high degree of hyperopia with convergent squint; correct the *full hyperopia* and "nail" the glasses to her head, allowing her to take them off only when retiring. The individual having the patient under observation, must determine what the entire degree of hyperopia is.

SCHOOL OF OPTICS.

The last class on optics this season formed June 24th. Radical changes are to be made during the coming year in this school. The adjoining building has been leased for five years. Great difficulties have been experienced by students in obtaining in New York satisfactory rooms with thoroughly comfortable beds. Those in the future so desiring will be able to avoid all trouble by simply coming to the school direct, where they will be provided with every reasonable comfort. All the modern books on the eye will be provided for the use of the students. The necessary facilities to practice with the ophthalmoscope will be supplied, and in fact everything will be done to avoid the annoyances and difficulties experienced by earlier classes. Those desiring to join a class in the early fall should apply as soon as possible.

When Wrong Solder is Used.

WHEN colored gold-work intended for coloring has, by mistake been soldered with silver solder, which renders it unfit for the purpose it can be prepared again for the operation by being placed in tolerably strong nitric acid, of good commercial quality and free from muriatic acid, as the latter would cause the mixture to be decomposed, with liberation of chlorine and dissolution of the gold. The nitric acid solution, if chemically pure acid is employed, will entirely free the work from all traces of the wrong solder, breaking it up and dissolving it without injuring in any way the articles operated upon. After the solder has been removed, and the work taken from the solution or acid, it should be rinsed, annealed and boiled out in dilute sulphuric acid—commonly called oil of vitriol—before re-soldering again with the proper solder. The nitric-acid solution should be of good strength, although not too strong; a good mixture consists of one part of acid to four of water. It should be used hot, and the necessary heat can be kept up to the point required by means of a gas jet.

A Few Hints on Timing a Watch.



BALANCE-SPRING well fastened at both ends gives a clear sound, when in motion. If the outer coil is to be bent upward (over coil, or Breguet spring), place the spring on the balance and this into the watch, then measure with some small object the height from the spring's upper surface to the hole in the stud. This is commonly done with a small screw driver, a graded assortment of which the good workman has always on his bench. When the height has been found correctly, the spring is removed after having carefully observed over which one of the coils is the stud hole. Lay the spring flat upon the table; hold it down about one coil from the outside with a strong pair of pliers, and draw the end up so that it stands obliquely.

Two pairs of pliers with curved noses lined with brass are generally used for forming the over-coil of marine chronometer springs. The coil of the spring where the over-coil is to start is grasped by one pair curved exactly to correspond with the spring, and the other pair used to bend the over-coil. The operation looks easy enough, but it really requires great skill to get at once an over-coil of the desired shape. The over-coils of watch springs are turned with steel tweezers having carefully polished curves. In forming the Phillips curves, some watchmakers use hot pliers of the requisite shape to set the curve to the required form.

Care must be taken to bend only a part of the outer coil over the others, and see that it stands free and at a proper distance above them. If it stands too close, the inclined part of the spring would with every vibration scrape against it with the proximate coils, which would produce a grinding that would very naturally impede the full development of the spring, thereby making a correct timing entirely impossible. Some workmen bend these over-coils with two sharp corners—a practice to be condemned, as both molecularity and elasticity are sadly disturbed at these places. It is better, by all means, to let the outer-curve rise up gradually.

The great advantage of an over-coil spring is that it distends in action on both sides, and thus relieves the balance pivots of the side pressure given with the ordinary flat spring. The Brequet spring, in common with the helical and all other forms in which the outer-coil returns toward the center, offers opportunities of obtaining isochronism by slightly varying the character of the curve described by the outer-coil, and thereby altering its power of resistance.

"The position of the points of attachment of the inner and outer turns of a balance-spring in relation to each other," says Mr. Britten, "has an effect on the long and short vibrations quite apart from its length. For instance, a very different performance may be obtained with two springs of precisely the same length and character in other respects, but placed in so that one has exact complete turns, and the other a little under or a little over complete turns. This property, which is more marked in short than in long springs, is depended upon by many for obtaining isochronism. A short spring as a rule requires to be pinned in short of complete turns, and a long one beyond the complete turns. In duplex and other watches with frictional escapements small arcs of vibration and short springs, it will be found that the spring requires to be pinned in nearly half a turn short of complete turns. Marine chronometer springs are found to isochronize better and act truer when pinned in at about a quarter of a turn short of complete turns."

The eye of the spring is occasionally operated upon in order to obtain isochronism, and is left more open for that purpose. It is found that alterations of the eye are most effective when the ends are attached about one-eighth short of half a turn, or one-eight short of a whole turn. Though experience, which is only acquired after many failures, is required to effect the desired purpose, as in setting the spring true again after the alteration, the effect is easily destroyed.

Having found and fastened a spring, our next duty is to observe its rate, that is, compare it with that of some standard timekeeper. It is of great assistance if the watch under treatment has a second hand. If not, ascertain by counting the number of leaves if the center pinion makes one revolution per minute This is the case if the number of the center and third wheel teeth, divided by the number of the third and fourth pinion leaves, gives 60. For example, if the center wheel has 64 and the third wheel has 60 teeth, and the third and fourth pinions have each one 8 leaves, we obtain 60 as the revolution number of the latter pinion per hour, because $64 \times 60 \div 8 \times 8 = 60$. If any other sum is obtained by this calculation, only the observation of the minute hand remains for our guide.

If the observer intends to derive any practical benefit from this comparison and observation, it is unconditionally necessary to carefully mark down the results obtained. Even when finishing the timing at one time, it would nevertheless be very difficult, when at the same time doing other work, to so closely remember the rate of the watch under observation, as to compare it with rates in other positions. Every uncertainty demands the repetition of the observation, and thus produces a loss of time. The difficulty increases with the number of watches, and it is best to note the rate of every one, and to designate them by some distinguishing mark. Even under the very favorable condition, when the watch has no second hand, and the calculation of the train comes out well, a close observation of the minute hand will materially expedite the work. Place in the hands as closely as possible, and observe the minute hand with a glass when it passes a line of the minute division on the dial. Such a passage may be observed within one or two seconds, and should be noted. After the lapse of one hour, and at exactly the same minute, repeat the operation. If any other minute were chosen, the additional risk of an incorrectness of the dial which is sometimes important would be run, and would have to be taken into account. As the taking of an observation at the exact minute is easily forgotten, and another hour would have to elapse before the chance for a repetition occurs again, it is better to take another observation a few minutes later, and also commit the results to paper, so that in case the time for a comparison of the first has elapsed, we will have another one; if both are made and the mean taken, the observation will be all the closer.

If the watch has no second hand, but is so constructed that the fourth wheel makes one revolution per minute, another proceeding may be adopted. Make a dot in the fourth wheel with a fine hard point, or make a dot with a little rouge stirred with oil. Now, observe by looking with a magnifier straight down on the dot on the the wheel, the passage of this dot under some fixed point, and put down the result. But a watch with a second hand can be compared easiest and closest of all. The observer may with a little practice. come within the tenth part of a second, by stepping with watch in hand close to the standard clock with second pendulum, listening to the ticking of the latter, and following with his eyes the movement of the second hand. It is well, even in such a case, to compare rates at the same place of the second dial, so as to exclude the possibility of any incorrectness of the dial division.

Having mounted a new spring, let it, so as not to waste time, go for three or four minutes and compare again. The watchmaker will at once know whether to let the spring either retain full length, correct the difference with the regulator, or whether it must be lengthened or shortened. These corrections are always done at the outer-coil, and only in very exceptional cases is the inner one ever touched for corrections.

When the watch is nearly brought to time, permit it to go several

hours without disturbing. Then compare the last two observations, and the difference, if the whole timing has been considered with any degree of intelligence, will now be so small that it can steadily be controlled with the regulator.

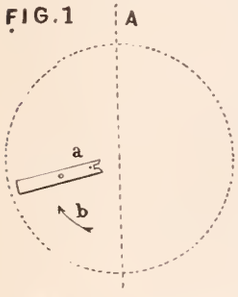
Problems in the Detached Lever Escapement.

BY DETENT.

IT IS the usual practice among adjusters in timing to position with a balance which has quarter screws, to test the watch in the position known as "stem up," and if in that position the watch is found to gain, the side of the balance which is down when the balance is in a state of rest, is rendered a trifle lighter by turning the quarter screw which is on that side of the balance; in other words making the lower side of the balance lighter. This rule only holds good if the balance has one full turn or less; if the balance makes more than a full revolution the reverse is the result from making the lower side of the balance the lightest. Now comes a difficulty which occurs in going barrel watches, as such watches always have a larger arc of vibration when first wound than when near run down; consequently the reader can understand that a man who carries his watch during the day time in a vertical position, and lays it down nights, will find his watch to vary.

In changing the poise of a lever to alter the rate of going in positions, the workman must thoroughly understand what he is doing, as, for instance, if the fork is so placed as to stand at nearly right angles to a perpendicular line when the watch is stem up, a forkcan be poised to offer a gravity resistance to the momentum of the balance when moving in the direction of the arrow *b*, Fig. 1. The first natural impression would be that the excess of weight in the rod *a* of the fork would accelerate the balance as much on the return vibration, as was lost on the upward movement; this, however, is not the case as the inertia of the fork has to be overcome by the force of the balance in advance of any movement, as would be affected by the excess of weight by throwing the fork out of poise. To satisfy any workman who may be sceptical on this point, let him take any carefully constructed watch and attach a small piece of silver or lead to one end of a fork with shellac, and test the effect.

FIG. 1



There are many changes which can be produced in position adjustments by loading or by reducing one end of the fork to throw it out of poise; and as the forks of watches are placed in all imaginable positions relative to stem up—or for that matter, any position in which the watch is placed, we are obliged to study the problem carefully to arrive at any fixed rules for the definite results. But changes wrought in this manner are more commendable than throwing a balance out of poise, because if a fork is thrown out of poise to overcome a mechanical defect in the springing it remains constant; but if we throw a balance out of poise, the same relative position of balance to spring must be preserved, or the correction instead of being a benefit is a detriment. To illustrate, suppose a workman has some repairs to effect in a watch, which demand the removal of both roller and hair springs; now if these are not replaced so as to bring the several parts into the same relation again, the adjustments by the time screws are lost.

One feature of springing seems to be ignored by many springers, which is the change in form and consequent relation as far as gravity is concerned of the spring to the balance. We will suppose in illustration, a balance-spring which when deflected or expanded, throws out much on one side; and again when the vibration occurs in the opposite direction the balance-spring is much more contracted on one side than on the other. Now, though we may take as much pains as we please to true our spring in the round and secure the relation of poise of the balance and hair-spring, still there is a time when the centre of gravity of the spring does not coincide with the centre of gravity of the balance; this is true both with the deflection and inflection of the spring, and it is really to these causes we have to look when we are studying adjustments to position more than almost any source of disturbance.

Let the reader take any fine watch performing with a revolution and one-half of the balance and place a friction under the rim, so as to hold the balance in the position it occupies at the time of its greatest arc of vibration. Let this be done so as to hold the balance in the position it is in when the balance-spring is most distended. It is easy to see that the centre of gravity of the spring has been changed from the point it occupied when the balance was at rest. Now, any change or movement of the centre of gravity requires a certain expenditure of force which tends to retain the velocity of the balance, and it must not be conceived that the isochronal properties of the balance-spring will annul such disturbances. The inflection of the spring also changes the location of the centre of gravity of the spring. This can also be studied by revolving the balance for three fourths of a revolution from the point of rest in the opposite direction, and again studying the relation of the spring to the balance.

The writer feels some hesitancy in advocating the idea of change of lever poise to effect position adjustments more from the fact that we seldom find two watches in succession in which the fork is placed in the same relation as regards position; but he can assure his readers that much can be done to aid position adjustments by throwing the fork out of poise. The change need not be to any marked amount; a mere tendency to fall to a given position will generally effect all we need.

To make a short resume of position adjustments we can condense the directions to something like the following: Ascertain if the escapement frictions are alike in all positions; if they are not seek to make them so. Have pivots to fit jewels to $\frac{1}{2500}$ of an inch. Be sure the pivots are flat on the ends, and rest square on the stones. Have jewels as thin as safety will permit, and perfectly polished on the inner surface of the hole. Test the balance-spring as above directed to see if any unusual distortion takes place in it when inflected or deflected. Isochronise the balance-spring to have the short vibrations 5 to 8 seconds per day the quickest. If with stem up the watch shows an acceleration, turn the quarter screw at the lowest point *in*, if the balance makes a full turn or less. If the balance turns 1¼ revolutions turn it *out*. Any change of poise in the fork which will retard the balance, when the watch is in that position, will produce the same effect. If the watch looses with with stem up, reverse the proceedings. It is usual to compromise in adjusting by letting one position gain to offset a corresponding loss in another position. For the average watch repairer, if he adjusts to dial up, dial down (these too should be alike), and stem up it will be as close as most men will pay for. Advise all customers to hang watch up in the vest during nights. No balance spring can be very closely adjusted when first put in. A year should elapse before close adjustments should be attempted.

FRENCH EXPOSITION AT MOSCOW.—The Emperor of Russia, at the solicitation of the French Minister of Finance, on May 2, signed a ukase authorizing the organization of a French Exposition at Moscow, and graciously permitting the use of the buildings, the property of the Crown, which served for holding the Grand Exposition of 1882. These buildings are admirably located, and cover about 50,000 square yards; they also enclose a garden of over 20,000 square yards, and eight areas, each of 1,200 square yards, separating the eight pavilions from the central building.



To Part Lead from Gold.—A correspondent desires to know how to part lead from gold. As lead melts at 617 ° F., and gold at 2,000° F., melting the lead and recovering the gold would be about the most convenient and quickest method.

To Remove Gold.—Gold is taken from the surface of silver by spreading over it a paste consisting of pulverized sal-ammoniac with aquafortis, and heating till the matter smokes and is nearly dry. The gold may then be separated by rubbing with a scratch brush.

To Clean Gilt Surfaces.—Gilt metallic surfaces are best cleaned with a solution of 30 grams [19 dwts. 7 grains] borax, and 1 kilogram [35 ounces avoirdupois weight] water; rub the surface gently with this, rinse in cold water, and dry with a soft linen rag. Picture frames only bear cold water.

Blue Gold.—Blue gold is difficult to repair at all times. It has however a very pleasing effect, when used in conjunction with other shades of colored gold in the formation of artistic work. Blue gold is a mixture of iron and gold. The formula for 18 karat is as follows: Gold fine, 15 dwts; iron, charcoal 5 dwts.

Fictitious Gold.—It is averred that the following recipe will produce alloys of metal so nearly resembling genuine gold as to almost baffle goldsmiths without resorting to thorough tests. Fuse together with saltpeter, sal-ammoniac and powdered charcoal, 4 parts platinum, 2½ parts pure copper, 1 part pure zinc, 2 parts block tin, and 1½ parts pure lead. Another good recipe calls for 2 parts platinum, 1 part silver, and 3 parts copper.

New Ingot Moulds.—New ingot moulds to prevent the gold adhering to them, should be well greased before using. It is much better to close them and pour in a solution of salt and water, letting them remain so for a day or two before using them; this causes oxidation, or rust, of the surfaces, and is an excellent preventive to the gold sticking, which is sometimes found to be so obstinate as to cause chipping of the mould, thus rendering it thereafter useless.

To Clean Mat Gold.—Take 80 grains chloride of lime, 80 grains of bi-carbonate of soda and 20 grains of table salt; pour over this about 3 liters [3 quarts] water, and fill in bottles, to be kept well corked. For use lay the dirty articles into a dish, pour over them the well-shaken fluid, let it submerge them, leave them in for a short time, and in extra cases, when very dirty, warm them a little. Next wash the articles, rinse them in acohol, dry them in sawdust, and they will appear like new. The fluid is of no further use.

Flexible Ivory.—To make ivory flexible, immerse it in a solution of phosphoric acid (specific gravity 1.13), until it partly or entirely loses its opacity, then wash it in pure cold water and dry. In this condition it will become as flexible as leather, but gradually hardens when exposed to dry air. An immersion in hot water also destroys its softness and flexibility. The following recipe may also be used: Lay the ivory in 3 ounces of nitric acid, diluted with 15 ounces of water. The ivory will be soft in three or four days.

To Clean Brass.—The method prescribed for cleaning brass, and in use in all the U. S. Arsenals, is claimed to be the best in the world. The plan is to make a mixture of one part common nitric acid, and one-half part sulphuric acid, in a stone jar, having also ready a pail of fresh water and a box of sawdust. The articles to be treated are dipped into the acid, then thrown into the water, and finally rubbed with sawdust. This changes them into a brilliant color immediately. If the brass has become greasy, it is first dipped in a strong solution of potash and soda in warm water; this cuts the grease so that the acid has full power to act.

To Etch on Steel.—The following recipe is recommended for making an excellent etching fluid for steel. Mix one ounce of sulphate of copper, one half ounce alum, and one half teaspoonful of salt with one liter (about one quart) vinegar and 20 drops nitric acid. This liquid may be used in two ways: either for etching the steel deeply, or else by giving it only a nice full appearance, according to the time left for it to act upon the article. Parts to be protected against corrosion, are to be covered either with beeswax, tallow, or some other similar substance.

Liquid for Bronzing.—A fluid for bronzing paper, glass, leather, etc., is prepared as follows: Diamond fuchsine 10 parts, and methyl-violet 5 parts, are dissolved with the aid of heat in 95 per cent. alcohol. To the solution 5 parts of benzoic acid is added, and the whole is boiled from five to ten minutes, until its green color has changed to a lustrous golden bronze. This is very brilliant, durable and adherent, is easily laid on with a brush, and dries in a few minutes.

To Perforate Glass.—To perforate glass by electricity, Foyes (*Chemiker Zeitung*) makes a sheet of hard india rubber 18 centimeters long and 12 centimeters broad, for a battery of 12′ cen. spark, runs a brass wire through it, and fastens it with a screw. The wire end he moistens with a few drops of olive oil, places the glass plate upon it, and passes the current conduit of the outer pole over the glass The sparks are then permitted to pass through the glass. By drawing the glass plate slowly over the caoutchouc, many small holes, closely situated together are obtained, and the glass may be broken in their direction.

Acid Color for 14 Karat Gold.—Saltpeter, 4 parts; salt, 2 parts; muriatic acid, 3 parts. Put the first two ingredients in the pot and heat strongly; add a little water; let boil up and when it becomes a thin paste add the muriatic acid; stir and put in the work, taking care to completely submerge it in the color; let it boil two minutes, then add as much water as you did muriatic acid, make it boil quickly again for two minutes, take out the work, boil in hot water, then in another pot of hot water to which a few drops of muriatic acid have been added, and afterward rinse in hot water and dry in sawdust.

To Solder Silver-—The best solder for general purposes to be employed in soldering silver, consists of 19 parts (by weight) of silver, 10 parts of brass, and 1 part of copper, carefully smelted together and well incorporated. To use this for fine work, it should be reduced to powder by filing; the borax should be rubbed upon a slate with water to the consistency of cream. This cream should then with a fine brush be applied to the surfaces intended to be joined, between which the powdered solder (or pellet) is placed, and the whole supported on a block of charcoal to concentrate the heat. In the hands of a skilful workman the work can be done with such accuracy as to require no scraping or filing, it being necessary only to remove the borax when the soldering is complete, by immersing in a jewelers' pickle.

Coloring Gold as in Etruscan Jewelry.—There are various methods for coloring gold as in Etruscan jewelry; in fact, every jeweler has a method of his own. The following however, has been successfully used for some years, and has given general satisfaction: 2½ ounces crocus, 2 ounces yellow ochre, 1½ ounce of verdigris, 1½ ounces copperas, ½ ounce white vitriol, ¼ounce borax. All these ingredients are to be reduced in a mortar to an impalpable powder, and intimately mixed with 5 ounces yellow beeswax; or, 20 dwts. saltpeter, 20 dwts. common salt, 2½ dwts. copperas, 2½ dwts. white vitriol, 2½ dwts. alum. The ingredients are to be put into an old crucible, and set over the fire, and the articles to be colored boiled in it until on trial they are found to have acquired the desired color. The beautiful satin finish is given to the class of goods called Roman gold, by carefully brushing the dead gold surface with a scratch-brush made from spun glass.



The Work Performed by a Watch.—A skillful watchmaker one day thus reasoned with a customer. "You complain," he said, "that your watch gains a minute a month. Well, then, you will congratulate yourself after you have heard me. You are aware that in your watch the balance which is the regulator, makes five oscillations every second, which is 432,000 a day, so that your watch exposed to all the viscissitudes which heat and cold occasion it, the varying weight of the air and the shaking to which it is subjected, has not varied more than one minute in a month, or two seconds a day. It has only acquired with each vibration of the balance a variation of the 216,000th part of one second. Judge, then, what must be the extreme perfection of the mechanism of this watch."

The Future of Aluminium.—Practical men doubtless will inquire whether the aluminium industry has been a paying investment to anybody. To this question, even the most enthusiastic believer in aluminium and its future must reply that the industry so far has not been very profitable to any of the numerous persons and companies engaged in it. The reason given by the aluminium men is not that there is any doubt of the usefulness of the metal at the prices at which it can now be produced, but that manufacturers do not yet understand its properties. They say that just as Bessemer had to wait for years before the merits of his process for making steel were acknowledged, so will the aluminium companies be compelled to wait till the merits of the beautiful white metal are more fully recognized, before fortunes can be made by separating it from the substances with which it is so tenaciously combined.

Ratio of Gold and Silver.—There are two distinct bases for our currency, of different intrinsic value. The gold dollar and the silver dollar are by statute declared to be equally the unit of value, and to be equally valuable; yet everybody knows that this is a fiction. Moreover, all experience shows that there cannot be, for any considerable length of time, a constant ratio between the exchangeable values of gold and silver. The statutory ratio is 1 to 16; that is to say, the law fixes the weight of the silver dollar at 16 times that of a gold dollar. The real ratio of their value in the world's commerce is about 1 to 23 at present, and, may be, five years hence, 1 to 30, for aught we know, or 1 to 12. In ancient Egypt the ruler fixed it at 1 to 2½; throughout the East in the fifth century it varied from 1 to 6 to 1 to 8; Herodotus states it at 1 to 13; in the time of Plato and Xenophon, in Greece, it was 1 to 16; this was about the ratio in Europe in the sixteenth century, though it was at times 1 to 11 or 1 to 12. In the eighteenth century, it became about 1 to 14, and in the earlier part of the present century it stood 1 to 15 or 1 to 15½. These facts show the absolute impossibility of fixing by law a ratio which shall correspond continuously to that regulated by the law of supply and demand.

The History of the Fork.—In 1611, an Englishman, who traveled in Italy, made the following entry in his diary: "I have observed in this country a custom which I have not observed any where else—people when they cut their viands, use a fork for doing it." He purchased one of them and took it home to England, but when he was about to use it, every one present ridiculed him; and he entered one day in his diary: "Mr. Lawrence Whittaker, my intimate friend, calls me 'Furcifer' (fork bearer), because I use a fork for eating." It appears that the unhappy instrument started the liveliest kind of controversion, and was denounced as an article contrary to the usages of good society. Theological talent took sides and hurled anathemas from the pulpit against it; "why," exclaimed a preacher, "the Divine Creator has given to mankind two hands with a thumb and four fingers each which it should employ in eating, and it is, therefore, a direct blasphemy to seek to improve on His disposition, etc."

The Rise of Silver Prices.—The *Moniteur de la Bijouterie, &c.* Paris, says that it receives every day letters inquiring about the present rise of silver prices. After surveying the premises, it formulates the following two propositions: "1. There is no sufficient reason justifying the rise in the price of silver bullion; 2. The present upward movement is but the effect of speculation in the London market; and it is impossible to foretell how long this upward movement is likely to last." In spite of these cogitations the silver keeps rising.

Coral Industry.—The coral regions which yield the largest quantity and the handsomest corals, are situated on the coast of Algeria, and have been worked since the middle of the 16th century Other coral grounds are found on the coast of Sicily, Corsica, Sardinia, Spain. the Balearics and Provence. More than 500 Italian barks and over 4,200 persons are engaged in the coral fishery; their production is annually about 56,000 kilograms [2 lbs., 3¼ ounces= 1 kg.] of the value of about 4,200,000 francs. Besides these, French and Spanish barks are engaged in the same occupation, and produce about 27,000 kilograms, of the value of about 1,500,000 francs, so that the total annual production is about 83,000 kilograms, of the value of 5,700,000 francs. The Italian fishermen pay a high royalty to the French government for their right of fishing for corals on the Algerian coast. Every boat pays 1,100 francs in summer and one-half of this sum in winter, in consequence of which the profit they gain in this highly dangerous pursuit is extremely small. The average yield per boat does not amount to more than 8,000 francs per season, and as the expenses are fully 6,000 francs, a clean profit of 2,000 francs only remains. There are more than 60 coral workshops in Italy, 40 of which are in the little town Torre del Greco, at the foot of Vesuvius. These shops give employment to about 9,000 persons, mostly women and children.

Gold and Diamond Fields of Brazil—Brazil, whose gold and diamond fields scarcely scratched in spots during the 18th century, yielded more than $1,000,000, is, so far as its vast interior is concerned, but little better known to the outside world than the heart of the "Dark Continent." When attention is called to the fact of the immense yield of the gold mines of the Province of Minas Geraes, during the last century, the conclusion is jumped at that the present production being small, the gold must have been exhausted. This conclusion, a few unfortunate investors in ill-starred mining ventures in that locality will tell you has been confirmed by their own experience. Travelers in the interior find gold dust a common article of barter. There is scarcely a "venda" in the gold-bearing localities where natives cannot be seen offering bags of the precious dust in exchange for goods. Diamonds are not infrequently found in streams by the native gold washers. Still there is no extensive systematic sluice or hydraulic mining for gold and regular exploitation of the diamantiferous localities. There have been no regular, scientific and economic prosecutions of vein mining, save at a very few places in Minas Geraes, and those have been invariably successful where the management was honest and capable, as it was for many years at the St. John Del Rey mine.

Diplomatic Bijouterie.—The Berlin *Tageblatt* says it has positive knowledge that a jeweler was requested by Prince Bismarck to estimate the value of the various decorations granted him from every part of the world, and that the jeweler had advised the Prince to deposit them in the Bank of the Empire. The latter has acquiesced in the view, stating that at Friedrichsruhe he had not a single burglar proof safe. The Prince had also requested the jeweler to extract the diamonds and other jewels from these "baubles," which request is at present being complied with. "The Prince," continues the *Tageblatt*, "dangled from his forefinger the chain of the Order of the Black Eagle, and told the jeweler: 'You will never see me again at Berlin. If I should ever be compelled to appear at an official ceremony, I will wear the French dress-suit, with the Iron Cross or the Cross of the Chevaliers de St.-Jean. But you will never see me wear again this Order of the Black Eagle.'" The Circular translates this item from a French paper and gives it for what it is worth.

The Chronometer Escapement.*

(WRITTEN FOR THE CIRCULAR)

Glashütte, February 24, 1890.

To the Editor of the Jewelers Circular:

This article was recently published in a German horological journal, but I have since essentially altered and enlarged it. I think that the article will be of general interest to your watchmakers, because besides the graphic directions for a correct construction, it also contains the tables for the manufacture of a correct chronometer escapement, which tables until now existed only for the anchor escapement. It is possible from these tables, therefore, to make the whole chronometer escapement as well as any wanting parts. For the sake of greater completeness I have computed the tables also for the German chronometer escapement, because this is becoming known abroad and being received with favor. RICHARD LANGE.

(*Continued from page 76, June, 1890.*)

CONCLUSION.

THE following tables of proportions are composed according to the preceding calculations for the lifting angles of the balance of 40°, 45°, 50°, and 60°. The prime figures standing above each column, are the corresponding magnitudes, when the scapewheel diameter or the center distance is taken as = 1. These proportion tables, which existed hitherto only for anchor movements, are calculated for the purpose of aiding any one in making correct chronometer escapements or any wanting part of them. The calculated values are based upon the metric (decimal) system. I have also appended a small conversion table for the convenience of those who use the English measure.

Millimeter.	Part of an inch.	Millimeter.	Part of an inch.	Millimeter.	Part of an inch.
0,1 =	0,003937	1 =	0,03937	10 =	0,3937
0,2 =	0,007874	2 =	0,07874	11 =	0,43307
0,3 =	0,011811	3 =	0,11811	12 =	0,47244
0,4 =	0,015748	4 =	0,15748	13 =	0,51181
0,5 =	0,019685	5 =	0,19685	14 =	0,55118
0,6 =	0,023622	6 =	0,23622	15 =	0,59056
0,7 =	0,026559	7 =	0,26559		
0,8 =	0,031496	8 =	0,31496		
0,9 =	0,035433	9 =	0,35437		

All the tables have reference only to escapements with escape wheels of fifteen teeth, because wheels with different numbers of teeth occur only very exceptionally. Again, not the radii, but the diameters of the wheels and rollers are given in the tables, because in practical work only the diameter and not the radius of a round object can be measured. The first column of table I. contains the pitch diameter of the escape wheels, while the second column gives the full diameter of the wheels, such as is found by measurement. This diameter is always a little smaller for a wheel of an unequal number of teeth, because on one side the measurement is taken over the tooth point, while on the other one measures over the interval between two teeth. The other three columns contain the diameter for the impulse roller and the distance of centers at which wheel and balance must be set apart. The reverse holds good in table II.; the distance of centers are given in column 1, while the other columns contain the diameter for the wheel and roller for these distances.

The next two tables refer only to the German chronometer escapement, which is recently attracting more attention for portable watches, and which has perhaps a future before it. In the German chronometer escapement, the drawing angle of the repose plane may be smaller than in that of the spring detent; the unlocking, therefore, takes place with a smaller resistance; beside this, it is also less sensitive from violent jars, because the chronometer lever is light and in equipoise; it will therefore not set as easily, and the parts are less fragile than in the spring detent escapement. The German chronometer escapement might therefore be preferable for pocket watches.

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I. Table of Proportions for Chronometer Escapements.

The Diameter of the escape wheel is given.

Diameter of Escape Wheel.		Total Lifting Angle of the Balance. 40°		Total Lifting Angle of the Balance 45°		Total Lifting Angle of the Balance 50°		Total Lifting Angle of the Balance. 60°	
Pitch. 1,0	Measured. 0,99	Roller Diam. 0,557	Center Distance. 0,73	Roller Diam. 0,5	Center Distance. 0,72	Roller Diam. 0,451	Center Distance. 0,695	Roller Diam 0.382	Center Distance. 0,656
6,0	5,94	3,34	4,38	3.0	4,32	2,71	4,17	2,29	3,94
6,2	6,14	3,45	4,53	3.1	4,46	2,80	4,31	2,37	4,07
6,4	6,34	3,56	4,67	3,2	4,61	2,89	4,45	2,44	4,20
6,6	6,53	3,68	4,82	3,3	4,75	2,98	4,59	2,52	4,33
6,8	6,73	3,78	4,96	3,4	4,90	3,07	4,73	2,59	4,46
7,0	6,93	3,90	5,11	3,5	5,04	3,16	4,86	2,67	4,59
7,2	7,13	4,01	5,26	3,6	5.18	3,25	5,00	2,75	4,72
7,4	7,33	4,12	5,40	3,7	5,33	3,34	5,14	2,82	4,85
7,8	7,72	4,34	5,69	3,9	5,62	3,52	5,42	2,98	5,12
8,0	7,92	4,46	5,84	4,0	5,76	3,61	5,56	3,05	5,25
8,2	8,12	4,57	5,97	4,1	5,90	3,70	5,70	3,13	5,38
8,4	8,32	4,68	6,13	4.2	6,05	3,79	5,84	3,21	5,51
8,6	8,51	4,79	6,28	4,3	6,19	3,88	5,98	3,28	5,64
8,8	8,71	4,90	6,42	4,4	6,34	3,97	6,12	3,36	5,77
9,0	8,91	5 01	6,57	4,5	6,48	4,06	6,25	3,43	5,90
9,2	9,11	5,12	6,72	4,6	6.62	4,15	6,39	3,51	6,03
9,4	9,31	5,23	6,86	4,7	6,77	4,24	6,53	3,59	6,17
9,6	9,50	5,35	7,01	4,8	6,91	4,33	6,67	3,66	6,30
9,8	9,70	5,46	7,15	4,9	7,06	4,42	6,81	3,74	6,47
10,0	9,9	5,57	7,30	5,0	7,20	4,51	6,95	3,82	6,56
10,3	10,2	5,74	7,52	5,15	7,42	4,64	7,16	3,93	6,76
10,6	10,5	5,90	7,74	5,30	7,63	4,78	7,37	4,05	6,95
10,9	10,8	6,07	7,96	5,45	7,85	4,91	7,57	4,16	7,15
11,2	11,1	6,24	8,18	5,60	8,06	5,05	7,78	4,27	7,35
11,5	11,4	6,40	8,39	5,75	8,28	5,19	7,99	4,39	7,54
11,8	11,7	6,57	8,61	5,90	8,50	5,32	8,20	4,50	7,74
12,1	12,0	6,74	8,83	6,05	8,71	5,46	8,41	4,62	7,94
12,4	12,3	6,91	9,05	6,20	8,93	5,59	8,62	4,73	8,13
12,7	12,6	7,07	9,26	6,35	9,14	5,73	8,83	4,85	8,33
13,0	12,9	7,24	9,49	6,50	9,36	5,86	9,03	4,96	8,53
13,5	13,4	7,52	9,85	6,75	9,72	6,09	9,38	5,15	8,86
14,0	13,9	7,81	10,22	7.00	10,08	6,31	9,73	5,34	9,18
14,5	14,4	8,08	10,58	7,25	10,44	6,54	10,08	5,53	9,51

II. Table of Proportions for Chronometer Escapements.

The Distance of Centers is given.

Distance of Centers from Balance to Escape Wheel.	For 40° Lifting.		For 45° Lifting.			For 50° Lifting.		For 60° Lifting	
— 1	Wheel Diam. (Pitch.) 1,368	Roller Diam. 0,762	Wheel (Pitch) 1,386	Diam. Measured. 1,372	Roller Diam. 0,692	Wheel Diam. (Pitch) 1,432	Roller Diam. 0,646	Wheel Diam. (Pitch.) 1,528	Roller Diam. 0,581
5,0	6,81	3,81	6,93	6,86	3,46	7,16	3,23	7,61	2,90
5,5	7,52	4,19	7,62	7,55	3,81	7,88	3,55	8,37	3,19
6,0	8,21	4,57	8,32	8,23	4,15	8,59	3,88	9 13	3,49
6,2	8,48	4,72	8,59	8,51	4,29	8,88	4,00	9,44	3,60
6,4	8,75	4,87	8,87	8,78	4,43	9,16	4,13	9,74	3,72
6,6	9,03	5,03	9,15	9,05	4,57	9,45	4,26	10,04	3,83
6,8	9,30	5,18	9,42	9,33	4,70	9,74	4,39	10,35	3,95
7,0	9,58	5,33	9,70	9,60	4,84	10,02	4,52	10,65	4,07
7,2	9,85	5,49	9,98	9,88	4,98	10,31	4,65	10,96	4,18
7,4	10.12	5,64	10,26	10,15	5,12	10,59	4,78	11,26	4,30
7,6	10,40	5,79	10,53	10,43	5,26	10,88	4,91	11,57	4,41
7,8	10,67	5,94	10,81	10,70	5,40	11,17	5,04	11,87	4,53
8,0	10,94	6,10	11,09	10,98	5,53	11,45	5,17	12,17	4,65
8,2	11,21	6,25	11,36	11,25	5,67	11,74	5,30	12,48	4,76
8,4	11,49	6,40	11,64	11,52	5,81	12,03	5,43	12,78	4,88
8,6	11,76	6,55	11,92	11,80	5,95	12,31	5,55	13,09	5,00
8,8	12,04	6,70	12.20	12,07	6.09	12,60	5,68	13,39	5,11
9,0	12,31	6 86	12,47	12,35	6,22	12,89	5.81	13,70	5,23
9,2	12,58	7,01	12,75	12,62	6,37	13,17	5,94	14,00	5.34
9,4	12,86	7,16	13,03	12,90	6,50	13,46	6,07	14,30	5,46
9,6	13,13	7,31	13,30	13,17	6,64	13,75	6,20	14,61	5,58
9,8	13,40	7,47	13,58	13,44	6,78	14,03	6,33	14,91	5,69
10,0	13,68	7,62	13,86	13,72	6,92	14,32	6,46	15,22	5,81
10,2	13,95	7,77	14,14	13,99	7,06	14,60	6,59	15,52	5,92
10,4	14,23	7,92	14,41	14,27	7,20	14,89	6,72	15,83	6,04
10,6	14,50	8,08	14,69	14,54	7,33	15,17	6,85	16,13	6,16
10,8	14,77	8,23	14,97	14,82	7,47	15,46	6,98	16,43	6,27
11,0	15,04	8,38	15,24	15,09	7,61	15,75	7,11	16,74	6,39
11,2	15,32	8,53	15,52	15,37	7,75	16,03	7,23	17,05	6,50
11,4	15,59	8,68	15.80	15,64	7,88	16,32	7,36	17,35	6,62
11,6	15,87	8,84	16,08	15,91	8,03	16,61	7,49	17,65	6,74
11,8	16,14	8,99	16 35	16,19	8,16	16,90	7,62	17,96	6,85
12,0	16,42	9,14	16,63	16,46	8,30	17,18	7,75	18,26	6,97

This table is only for a total lifting angle of 45° and al so the measured diameter of the scapewheel given at the same time. These values have been left away in the other lifting angles, because being readily ascertained from the lifting angle of 45°, as also from the 1st table, or else they may be ascertained direct by calculation, by multiplying the pitch or full wheel diameter by 0.99; the sum obtained is the measured diameter of the scapewheel with 15 teeth.

III. Table of Proportions for Chronometer Escapements. Quantities for the German Chronometer Escapement.

B. The Distance of Centers from Scapewheel to Balance is given.

Diameter of the Scapewheel.		Total Lifting Angle of the Balance. 45°		Distance of Centers from Scapewheel to Pivotted Detent.	Distance of Centers from Pivotted Detent to Roller.	Distance of Centers from Balance to Pivotted Detent.
Pitch.	Measured.	Roller Diam.	Center Distance.			
1,0	0,99	0,5	0,72	$E_1 = 0{,}618$	$E_2 = 0{,}363$	$E_3 = 0{,}79$
6,0	5,94	3,0	4,32	3,71	2,18	4.74
6,2	6,14	3,1	4,46	3,83	2,25	4,90
6,4	6.34	3,2	4,61	3.95	2,32	5,06
6,6	6,53	3,3	4,75	4,08	2,40	5,21
6.8	6,73	3,4	4.90	4,20	2,47	5,37
7,0	6,93	8,5	5,04	4,33	2,54	5,53
7,2	7,13	3,6	5,18	4,45	2,61	5,69
7,4	7,33	3,7	5,33	4 57	2,69	5 85
7,6	7,52	3,8	5,47	4,70	2,76	6,00
7,8	7,72	3,9	5,62	4.82	2,83	6,16
8,0	7,92	4,0	5,76	4,94	2,90	6,32
8,2	8,12	4,1	5.90	5,07	2,98	6,48
8.4	8,32	4,2	6,05	5,19	3,05	6.64
8,6	8,51	4,3	6,19	5,31	3,12	6,79
8,8	8,71	4,4	6,34	5,44	3,20	6,95
9,0	8,91	4,5	6.48	5,56	3,27	7,11
9,2	9,11	4,6	6,62	5,68	3,34	7,27
9,4	9,31	4,7	6,77	5,81	3,41	7,43
9,6	9,50	4,8	6,91	5.93	3,49	7,58
19,8	9,70	4,9	7,06	6,06	3,56	7,74
10,0	9,9	5,00	7,20	6,18	3,63	7,90
10,3	10,2	5,15	7,42	6,36	3,74	8,14
10,6	10,5	5,30	7,63	6,55	3,85	8,37
10,9	10,8	5,45	7,85	6,74	3,96	8,61
11,2	11,1	5,60	8,06	7,92	4,07	8,85
11,5	11,4	5,75	8,28	7,11	4,18	9,08
11,8	11,7	5,90	8,50	7,29	4,28	9,32
12,1	12,0	6,05	8,71	7,48	4,39	9,56
12,4	12,3	6,20	8,93	7,66	4,50	9,79
12,7	12,6	6,35	9,14	7,85	4,61	10,03
13,0	12,9	6,50	9.36	8,03	4,72	10,27
13,5	13,4	6,75	9,72	8,34	4,90	10,66
14,0	13,9	7,00	10,08	8,65	5,08	11,06

IV. Table of Porportions for Chronometer Escapements. Quantities for the German Chronometer Escapement.

A. The Diameter of the Scapewheel is given.

Distance of Centers from Escape to Balance Wheel.	For 45° Lifting.			Distance of Centers from Escape Wheel to Pivotted Detent	Distance of Centers from Pivotted Detent to Roller.	Distance of Centers from Balance to Pivotted Detent.
	Wheel Pitch.	Diam. Measured	Roller Diam.			
= 1	1,386	1,372	0,692	$l = 0{,}858$	$E_1 = 0{,}5045$	$E_3 = 1{,}097$
5,0	6,93	6,86	3,46	4,29	2,52	5,48
5,5	7,62	7,55	3,81	4,72	2,77	6,03
6,0	8,32	8,23	4,15	5,15	3,03	6,58
6,2	8,59	8,51	4,29	5,32	3,13	6,80
6,4	8,87	8,78	4,43	5,49	3,23	7,02
6,6	9,15	9,05	4,57	5,66	3,33	7,24
6.8	9,42	9,33	4,70	5,83	3,43	7,46
7,0	9,70	9,60	4,84	6,01	3,53	7,68
7,2	9,98	9,88	4,98	6,18	3,63	7,90
7,4	10,26	10,15	5,12	6,35	3,73	8,11
7,6	10,53	10,43	5,26	6,52	3,83	8,34
7,8	10,81	10,70	5,40	6,69	3,93	8,56
8,0	11,09	10,98	5,53	6,86	4,04	8,78
8,2	11,36	11,25	5,67	7,03	4,14	8,99
8,4	11,64	11,52	5,81	7,21	4,24	9,21
8,6	11,92	11,80	5,95	7,38	4.34	9,43
8,8	12,20	12,07	6,09	7,55	4,44	9,65
9,0	12,47	12,35	6,22	7,72	4,54	9,87
9,2	12,75	12,62	6,37	7,89	4,64	10,09
9,4	13,03	12,90	6,50	8,06	4,74	10,31
9,6	13,30	13.17	6,64	8,24	4,84	10,53
9,8	13,58	13,44	6,78	8,41	4,94	10,75
10,0	13,86	13,72	6,92	8,58	5,04	10,97
10,2	14,14	13,99	7,06	8,75	5,14	11,19
10,4	14,41	14,27	7,20	8,92	5,25	11,41
10,6	14,69	14.54	7,33	9.09	5,35	11,63
10,8	14,97	14,82	7,47	9,27	5,45	11,85
11,0	15,24	15.09	7,61	9,44	5,55	12,07
11,2	15,52	15,37	7,75	9 61	5,65	12,29
11.4	15,80	15,64	7,88	9,78	5,75	12,50
11,6	16,08	15,91	8,03	9,95	5,85	12,72
11,8	16,35	16,19	8,16	10,12	5,95	12,94
12,0	16,63	16,46	8,30	10,30	6,05	13,16

EXAMPLES FOR THE USE OF THE TABLES.

Although the application for practical use is visible at once from the tables, I will explain by a few examples.

Example I. The fall or pitch diameter of a chronometer escape wheel is 8.4 mm., the other dimensions are wanted for the total lifting angle of the balance of 50°. From the table of proportions I. result the following values: Distance of centers from balance to escape wheel = 5.84 mm., diameter of roller = 3.79 mm.

Ex. II. For the given distance of centers of 7.2 mm., are to be ascertained the other dimensions for the balance lifting of 45°. From the table of proportions II. are ascertained the full wheel diameter = 9.98 mm, the roller diameter = 4.98 mm.

Ex. III. The full diameter of a chronometer escape wheel is 8.4 mm.; it is desired for the total lifting angle of the balance of 45° to know the other dimensions for the German chronometer escapement, which is ascertained from Table III. According to this table, the roller diameter amounts to 4 2 mm, the distance of centers of scape wheel and balance = 6 05 mm., the distance of centers from scape wheel to pivotted detent = 5.19, the distance of centers from the pivotted detent to roller = 3.05 mm., and from the balance to pivotted detent = 6.64 mm.

The Repairs of a Detached Lever Watch.

A COMPLETE essay on the lever escapement would be required to enumerate all the possible faults to be found in a lever watch, and a short article in a periodical can only begin to do the subject full justice. In the following, however, we will point out some of the most glaring defects with directions to remedy them.

If the watch has a strong mainspring and a bad vibration, and the train free, it may be assumed that the escapement is at fault. A very common fault by which the vibration is spoiled, is too much run on the pallets, and the escapement pitched too deep; all run is a serious evil, and no more than is sufficient for freedom should be allowed. If, on closing the banking pins, the pallets escape freely and the roller and lever are not free, first try if the guard pin is free with the banking pins closer and has a fair shake when the end of the lever is moved. If tight, the guard pin must be bent back, or the roller edge turned away and repolished, to give the guard pin freedom, care being taken that the pin, though free, is not so free as to pass the roller or to stick; reducing the size of the roller insures its safety though an impression to the contrary seems to prevail among all makers of common lever escapements, judging by the large radius of roller outside the ruby pin, which is seen in all cheap levers of English, Swiss, and German make. Both time and trouble are saved by making the guard roller as small as possible. True theory requires that it must be smaller than the roller pin radius, hence the double roller escapement. Should the ruby pin be unable to leave the lever notch, with the motion of the lever curtailed to that given it by the pressure of the pallets, only, the necessary freedom must be obtained by more legitimate means than wasting the motive force in pallet motion and extra locking friction, an evil, in its best form, to be kept within the smallest possible limits in all escapements. If the

lever notch is very deep, removing sufficient with a piece of oilstone will give freedom, but much care is desirable in making a radical alteration, and jobbers should think twice before removing parts they cannot restore. Putting the roller on a wire and warming it sufficently to allow the ruby pin to be moved nearer the center of the roller, to make a shallower depth, and if the pin is circular, replacing it with one flattened on the surface, will allow the pin to leave the lever notch with more freedom ; and experiments with a brass pin in the roller should also precede any serious alterations ; exchanging a small roller pin for a large oval or flattened one, will diminish the labor required in unlocking, and improve some escapements by changing the engaging friction at the line of center to a disengaging action.

A shallow wheel and pallet depth is shown by the recoil of the lever and pallets ; but the repairer need not conclude that he must pitch every depth ; when he observes some recoil on the pallets when they are moved without the balance in. The scape wheel teeth may be bent and cause them to fall, not on the locking face, but on the next pallet. Very fine and low angle pallets are most liable to this fault, as the run is made as little as possible to insure lightness and celerity of action. Recoiling pallets are not necessarily fatal to the time-keeping qualities of the watch ; on the contrary, some of the best lever watches have owed their success to it. If the lever is very short, and the train slow, it is apt to be fatal, as the recoil of the guard pin is continuous ; but if the lever and roller depth is full deep, it carries the pallet over the recoil corner in safety and I have had so many fine Swiss levers in which the pallets recoiled, allowing the watch to run like a clock without a pendulum, that I am convinced they are purposely made so, as the higher the class of work the more frequent is this quality and in most the rule. Swiss levers and rollers are usually very much longer and larger than English, and the trains much quicker. The power of the train applied through the small pallet and large lever is equally effective in propelling the balance as the short lever ; but the pallet, in the matter of recoil, being such a short portion of the lever, with which it is acting, is carried by the lever and roller with such overwhelming force and rapidity that the wheel has not time to exert a recoil influence on the pallet, and the pallet has not the power to transmit it to the roller, which enjoys an amount of guard pin freedom and shake in the lever notch that would be fatal if the lever and pallets were more mechanically equal in size and power.

When a large lever and roller are used, the fitting of the various actions need not be so close as when they are small ; though the extra weight should be reduced as much as possible by dispensing with all superfluous metal. There exists a common impression that the lever performs some of the functions of the balance. and that weight is of no consequence, if equalized. This error is self-evident if we consider that the heavy lever possesses a large amount of inertia which must be overcome ; unlike a heavy balance which compensates for its extra friction by the greater ease with which it overcomes the locking resistance, though for common watches, light balances and light lockings seem to be the most successful. Pallet makers seem to have the idea that the principal purpose of pallets is to keep the wheel secure on the locking face, and to prevent the guard pin from touching the roller. These are the two points which constitute a difference between this escapement and the verge, horizontal, and duplex, which have done good service on contrary principles, the motive force being in constant contact with the vibrating medium, and considering that the first lever escapement, the rack lever has no locking but only a dead circular rest, like the horizontal and that the last lever escapement invented by J. F. Coles (England) the repellent coil has a recoil action giving a friction on the balance axis equal to the duplex, it seems desirable to make pallets and levers with the primary object of transmitting the power of the scape wheel teeth, of which they may be considered extensions, with the least possible loss of power and energy. The amount of trouble involved in neutralizing the effects of heavy locking has often made me wish the detached lever had never been invented.

A locking under no circumstance is required to be heavy, and its entire absence, and the occasional and constant contact of the guard pin with roller edge, on which it can exercise no injurious pressure, would be less hurtful to even a fine timekeeper, than the intermittent drag which is caused by a powerful locking at every vibration. A circular rest supplies all that is needed for common work, and deep escapements, which are the rule in this work, as being the easiest to execute, would not be so objectionable. The pressure of the wheel on the pallet would keep the lever steady, and plenty of run in all directions could be had without the fatal results so noticeable, which defy all the repairer's art. Appliances for making and altering jeweled pallets not being common or profitable to use among watchmakers in America, the difficulty is eased considerably by altering the angularity of the teeth of common English levers. The retarding influence of lockings often neutralizes the effects of temperature and in cold weather and when dirty, owing to the balance wheel losing its vibration energy, many lever watches instead of gaining, take up a losing rate, owing to the retardation of the balance in unlocking. This is not an unmixed evil ; but compensation for lockings, changes caused by variations in oil, and cleanliness are not provided for by manufacturers, though they must be combatted by repairers.

(*To be Continued.*)

Diamantine or Rouge?

FOR a long time, the prepared peroxide of iron, the so-called rouge, or redstuffs, was exclusively used in the factory, as well as the repair shops, for polishing watch parts. At length in the middle of the sixties, another agent was introduced for the purpose ; in Germany it was first called *Yterbit*, a certain aluminous earth found in Scandinavia ; finally it received the name of diamantine, and in French, *poudre de Rubio*.

The advantages possessed by this white powder over the rouge, as a polishing agent, are so positive that he who has ever seriously tried to produce a deep black lustre with it, will never afterward use anything else. By all odds, burnishing with rouge requires much longer time ; it is so much more difficult to ascertain the point when the fullest black luster is obtained ; besides this, the steel to be polished must have a certain degree of hardness ; and finally the work is most difficult with the burnishing of the bridge screws. No matter how carefully the polishing with rouge is performed, these screws will invariably turn out striped. The writer, when a young man, took great pride in the polishing of watch parts.

It is entirely different with diamantine. Steel will with it assume a deep black and pure luster, even if annealed several shades lighter than light blue. It is not at all necessary to be so careful in the choice of the polishing file ; it may consist of iron, composition, glass, tin, or boxwood. The latter medium is best for those surfaces which do not need to be entirely flat. Every tyro can at once polish with it, and all bridge screws turn out well. It may also be recommended for brass, German silver and gold. Nevertheless, it is difficult to find a watchmaker capable of producing with it a full black luster on ratchets, regulators, pallets and other parts—jobs daily found in the repairer's shop. And yet, nothing is simpler than this. All flat pieces should previously be ground carefully with glass, and then be polished with diamantine at a still lustrous place on the glass. When the polishing luster has been produced as far as the edges, take a flat stiff tin file, charge it with a little diamantine and fine oil, and take out the last traces of scratches and gray places, still found on the surface.

If in spite of the many advantages of diamantine, watchmakers still cling to rouge, the reason is principally due to the bad quality of the diamantine. We have arrived almost to the time when diamantine is no longer to be had, as the abomination held at present under this high-sounding name, is not deserving of it.



A Complete History of Watch and Clock Making in America.*

[By Chas. S. Crossman.]

Number Forty-four.

Continued from page 64, May, 1890.

CLOCK MAKING:

GAWEN BROWN, BOSTON.

Gawen Brown was a clockmaker who flourished about the middle of the last century. His shop was located in a three story wooden building on State street, Boston, Mass., on the site of the present Merchants Bank. He is said to have made the "Old South" clock but it is more likely he imported the movement and supervised the setting up of it. There is a clock now on exhibition in Memorial Hall which formerly belonged to Matthew Boyle, first pastor of the Hollis Street Church in Boston, and which is said to have been made by Brown, in 1750. The case is of the ordinary square hall-clock style, finished black in imitation of ebony. The clock has a calendar showing through the dial but no moon changes. There is but little definite information to be obtained about this clockmaker.

VARIOUS COLONIAL CLOCK MAKERS.

We shall now speak of the principal remaining clockmakers of New England, more according to location than chronologically, as we have done so far. First, we shall speak of a few in Maine and New Hampshire, and then come along through Massachusetts and Rhode Island into Connecticut, and there leave New England for a time, and its colonial clockmakers for good.

Starting with Maine, Nathaniel Hamlen, of Augusta, was the first clockmaker of whom we find any record in that town. He flourished from 1795 to 1820. But little is known of him that would be of interest to our readers.

J. Bisbee, of Brunswick, dates from 1798, doing a small business in the clockmaking line. Probably the most noted clock he made was the one which he used as a sign, the striking arrangement being the figure of a black boy mounted on a horse, with whip in hand. When the hour was to be announced, the boy struck the horse, which kicked the hours on the bell with its heels. Mr. Bisbee gave up clock making about 1825.

Benjamin Swan was born in Haverhill, Mass. He came to Augusta in 1808, where he served an apprenticeship at the clockmaking business with Frederick Wingate, and afterwards established himself in that business at Augusta, residing there during his lifetime, highly respected for his industry and probity. He was elected a representative to the Legislature in 1839 and 1840, was prosperous in his business, making eight-day brass clocks, most of which are still in existence. He reared and educated a large family of children, and died in December, 1867, aged seventy-five years.

Abel B. Eastman came to Belfast from Concord, N. H., and commenced the manufacture of hall clocks in 1816. He died in 1821. William Quimby, an apprentice of Mr. Eastman, succeeded him, and for several years made the same style of clocks.

In 1830 Phineas Quimby, brother to William, commenced to make "Willard time-pieces," which he continued for some years.

Robert Eastman and James Cary, Jr., of Brunswick, commenced making clocks in 1805, the former alone for one year, when the firm became Eastman & Cary. In 1809 Mr. Eastman sold out to Mr. Cary, who carried on the business alone for many years. It was in this shop that A. L. Dennison, who was to figure so conspicuously in early American watch manufacturing, served his apprenticeship, between 1830 and 1835.

Timothy Chase commenced to make clocks in Belfast in 1826, which he continued as long as the demand for this kind of clock continued. They were mostly with calendar attachment. He was the founder of the present firm of Hiram Chase & Son, jewelers, of that city.

Abner Berwick, of Berwick; Samuel Raulet, of Monmouth, and Frederick Wingate, of Augusta, all of Maine, also made the regular style of high case clocks in their respective localities, early in the present century.

Jos. Chadwick, Boscowen, New Hampshire, commenced clock-making there about 1810, making the old style clock for some years, and afterwards the Willard time-piece until about 1831, when he quit the business.

Benjamin Morrel, also of Boscowen, was quite an extensive manufacturer there from 1816 or 1818 to 1845. During the first part of this time he made Willard time-pieces, but soon gave this up, and made scales and a few tower clocks.

Leonard W. Noyes, Nashua, N. H., carried on the clock making business there from 1830 to 1840. He employed eight to twelve hands, and made Willard time-pieces on quite an extensive scale for that time.

Simon Johnson, of Sanbornton, commenced there about 1850, coming from England and locating in this quiet spot, where game and fish were somewhat abundant, as he was very fond of hunting and fishing. He also had a small farm which he worked. He made regulator movements for the most part, and sold them to dealers. The movements in the clocks in the court-house in the City of New York are of his make. He died in 1866, and was succeeded by his sons, R. S. and R. D. Johnson, who have since carried on the business in a comparatively small way. The names of the following also appear as early clock makers in New Hampshire: Levi Hutchins, of Concord; Noah Raulet, at Raulet's Pond; Gilmanton and David Dutton of Mount Vernon.

We shall mention but one firm in Vermont, and that is Messrs. Lord & Goddard, of Rutland, who commenced there in 1797. Mr. Goddard is, to a certain extent, a celebrity, as he was an apprentice of Luther Goddard, of Shrewsbury, Mass., the first maker of watches in America. The clocks of this firm were all of a high class of workmanship. One of the musical clocks is owned by a grandson, Mr. George H. Goddard, of Plainfield, N. J., and may still be seeen at his residence in running order. On the dial of the clock is shown, at the centre in the form of an arch, the day of the month; seconds are indicated above this, while above the moon quarters are the names of the tunes to be played each day of the week by hammers on a chime of bells. They play a psalm-tune on Sundays. Captain Goddard and Captain Lord, as they were known in Rutland, were ranked as among the leading business men of their time. Both held offices of trust, and could point to a very respectable, if not distinguished ancestry. Their intelligence and probity secured for them more than common respect and regard, and they contributed largely to the moral, educational, industrial and civil progress of the town.

We now pass into the State of Massachusetts, which was the centre of New England clockmaking, as it was the centre of many other industries.

Eaton Sanford, of Plymouth, had a small shop on Hancock Brook, near the Waverly town line. He is said to have built the first clock in Plymouth. From what we hear of him, he seems to have flourished about the middle of the last century.

Caleb Leach was a very ingenious clockmaker in Plymouth. He projected, in 1796, an aqueduct for Plymouth, said to be the first in

* Copyright by Chas. S. Crossman, 1885.

the United States. It was made of white pine logs and supplied the town with water.

Reuben Tower, also of Plymouth, was an apprentice of Joshua Wilder, of Hingham. He went to Plymouth in 1813, but came back to Hingham about five years later, and spent the remainder of his life there, living to a ripe old age.

Daniel Balch, Newburyport, was a very early maker. He located there in 1760. Most of his clocks had silver figures, and a silver rim around the dial. He died in 1790, at about sixty years of age.

Daniel Balch, Jr., also of Newburyport, was born there in 1761, and served his apprenticeship with his father. He commenced on his own account, but never made as many clocks as his father did. He turned his attention more to a general business. He had a store in Market Square, where he was burned out in the large fire of 1811. He rebuilt of brick at once, and the building still remains. He died in 1835, at the age of seventy-two years.

David Wood, also of Newburyport, was a contemporary with the last named.

Ephriam Potter was the first clockmaker in Concord. He made wooden clocks, which were set up in some houses as early as 1775, and kept good time, as good time went in those days.

Levi Hutchins, also of Concord, and his brother Abel, commenced the clock making business in Concord in 1785, and carried it on until 1818. Their clocks are noted as excellent time-keepers, and some of them are still found in many of the old families of Massachusetts.

Daniel Munroe was born in 1775 at Roxbury, Mass. He was a son of Jederdiah Munroe, who was killed at the battle of Lexington in April, 1775. He served his apprenticeship in Roxbury with Simon Willard. He then went to Concord, where he formed a partnership with a Mr. Whitney, the firm being Munroe & Whitney. They made both time-pieces and high-case clocks. After a few years he removed to Boston and engaged in a general jewelry business.

Ezra Bachelder was born in Danvers in 1764. He went to Andover at an early age to learn the clockmakers' trade of a Mr. Adams, who was a clockmaker there. Mr. Bachelder returned to Danvers in 1793, and commenced business there for himself. His clocks were of the usual style, and not above the common grade of workmanship, selling at thirty to forty dollars each. He still continued to reside in Danvers until his death in 1859.

Andrew Bachelder, although a blacksmith by trade, made a few clocks in Danvers.

Samuel Rogers was born in 1766, in the town of Marshfield, and was a direct descendant of John Rogers, the martyr of Smithfield. He afterwards moved to Plymouth, Mass., and later changed his address to East Bridgewater, Mass., where he died in 1839. From the information which we have, we do not think he served an apprenticeship. He made clocks and finished watches. His first watch was made or finished in 1805, and is marked No. 1, and is owned by his grandson, Allan Rogers, of Gloucester, Mass., through whose kindness the writer was permitted to examine it. It is the usual style of English verge, of ordinary size, all the parts being imported, except the plates, which are of silver and of his own make. The top plate is engraved, Samuel Rogers, No. 1, 1805. The case is also of his make. He made another, but it was never known what became of it. He was very ingenious. Among other things, he invented the first machine for making tacks and nails by one operation. His head was full of inventions. It was said of him that he tried everything but flying machines and perpetual motion. He finally died from excessive brain work and over study. Not much is known of his clocks. One of them that has been running for nearly a hundred years, and is owned by Wales Rogers of East Bridgewater, Mass., is a good specimen of workmanship.

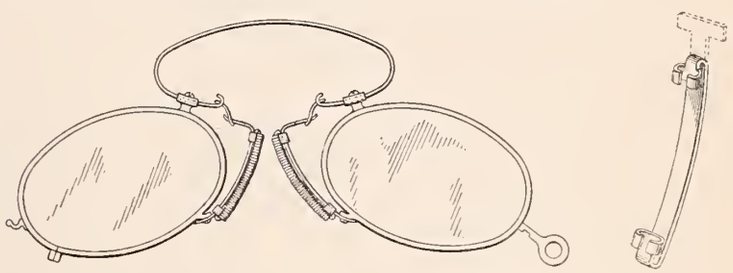
Ezra Whitman, also of Bridgewater, was born there in 1769, and was a self-taught clockmaker of some note He died in 1857.

(*To be continued.*)



IMPROVED EYEGLASS FRAME.

THE effectiveness of eyeglasses and spectacles depends in a large degree upon the firmness or fixity with which they sit upon the bridge of the nose. If the glasses are allowed to move upon that feature, even but slightly, so as to throw the axis of the glass out of its proper position, the focus will be out of place, and the eyesight will consequently be injured by the strain thus exerted. For this reason many oculists object to the use of the pince-nez, and prefer the spectacles having the supports over the ears of the wearer. In the former glasses, to correct the fault, it has been found necessary to provide the spring-clasps, which hold the glasses upon the nose, with roughened edges, usually constructed of gutta-percha or similar substances, the effect of which, from the pinching due to the springs, is very unpleasant to the wearer. This does not hold the glasses with sufficient firmness, because of its rigidity and the resulting impossibility of fitting its gripping-edges to the shape of the bridge of the nose. In place of forming a good contact over an extended surface, but two or three points of contact are made, and the unevenness in the grip has a tendency to displace the glasses.



The object of the invention illustrated herewith (patented April 29, by Stacy B. Opdyke, now of Vineland, N. J.,) was to obviate these difficulties by providing a suitable covering for the spring parts, which has the effect of holding the glasses firmly upon the bridge of of the nose. The device is not, however, limited to pince-nez glasses, but is also adapted to the ordinary spectacles, in which the bridge may be covered by the material to form a soft and springy rest.

The essential feature of the invention is the covering of the parts which rest upon or grip the nose with a soft surface made of horsehair or other animal or vegetable fiber, forming a series of independent gripping parts, each of which adjusts itself to the shape of the nose with which it is in contact, and without displacement of the other parts. Besides this improved gripping action, the softness of the parts makes it very pleasant to the wearer. Again, the horsehair is capable of being variedly colored, which may adapt it to the different kinds of goods, giving them a delicate and attractive appearance, without impairing their utility.

NEW SEPARABLE COLLAR BUTTON.

ANOTHER to the many improvements in separable collar buttons already produced is illustrated below. It is the invention of Adam Loos, of Toledo, Ohio, who received his patent letters May 13, 1890. From the description one will readily perceive its advantages.

Figure 1 of the drawings is a vertical section of the button, showing the key in the keyway prior to being returned in the recess in the inner tube to lock the parts together. Fig. 2 is also a vertical section of the button, showing the parts locked together. Fig. 3 is a perspective view of the inner tube. The device consists of an

outer shank tube secured to the shoe and a shorter inner shank tube secured to the latter. This inner shank tube is sloted and recessed to form a keyway and has a spring bearing against it. The cap is provided with a disc which is perforated just sufficiently to allow the entrance of the shank, as seen in Fig. 2. This cap secures a post which has a laterally-projecting key on its free end.

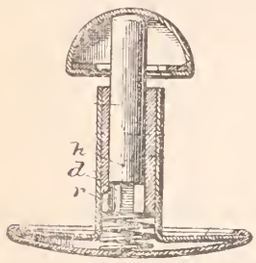


FIG. 1.

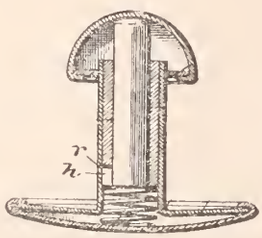


FIG. 2.

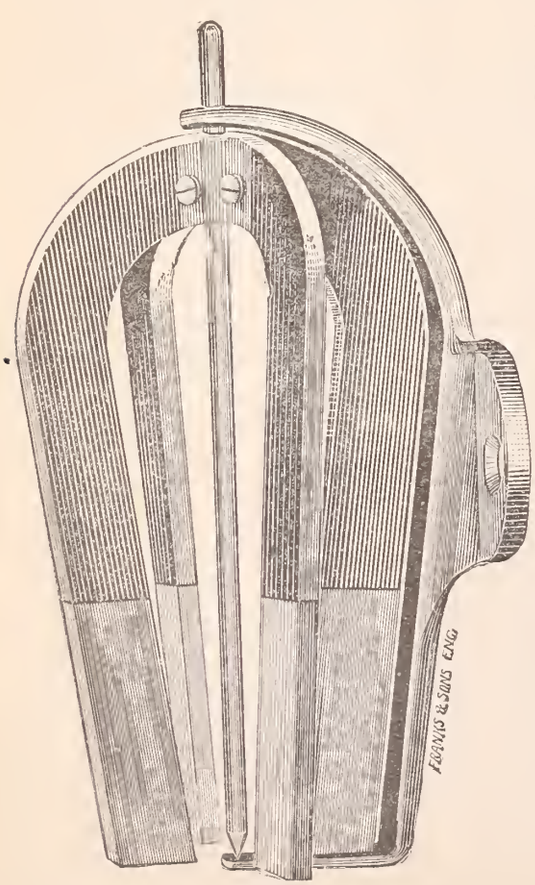


FIG. 3.

In putting the separable parts together the post is inserted within the inner tube with the key *h* in the keyway *d*. The post is then pressed inward until it comes in contact with and compresses the spring, by which time the key will have passed below the lower end of the inner shank tube, and then the post is turned until the key registers with the recess *r* in the tube, when the spring will force the post outward, carrying the key into the recess, and thus locking the parts together. It will be observed that in this collar-button the shank presents an outer surface unbroken by slots or perforations of any kind. Furthermore, the post snugly fits within the shank, and when the parts are locked together the outer end of the shank is firmly held within the cap, thereby rendering the parts rigid with respect to each other.

IDE'S PRACTICAL DEMAGNETIZER.

FERD. F. IDE, well-known in horological circles, was on May 27, granted patent letters on his Practical Demagnetizer, which has been on the market for some months. An illustration of the invention is given here. The device embodies a number of horseshoe-shaped magnets, preferably two, which are secured together at their curved portions by means of screws. For this purpose, as wellas to enable their legs to stand radially to a central axis or spindle, these curved portions are formed with central parallel surfaces placed back to back, and connected to the legs by extra curved portions arranged in the horizontal plane. The central spindle or axis is secured between the magnets at their point of union, one portion extending some distance beyond the connected portions of the magnets, and bearing on one arm of a bracket preferably of brass; the opposite end of the spindle or axis is tapered or pointed and bears in a cavity in the opposite arm of the bracket. The bracket is adapted to permit of its being fastened to any suitable support.



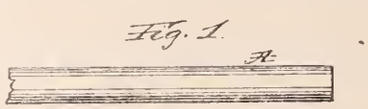
The instrument is used as follows: The projecting portion of the spindle being grasped between the forefinger and thumb of the right hand is revolved, carrying with it the magnets, and the watch, held in the other hand, is held about a foot away from and centrally to the poles of the magnets, and is then moved slowly toward the same, thus finally bringing the balance-cock of the watch in contact with the under side of the lower arm of the bracket which is smooth for that purpose, the watch being there held for several seconds. The watch is then slowly moved away about a foot distance, care being taken to keep the magnets continually revolving during the entire operation, which generally should occupy eight to ten seconds. This method will have to be slightly varied in some instances, which experience will soon suggest. The base of operation must always be confined to the watch-balance, as any bad performance of the watch is due to irregularity at that point.

METHOD OF PLATING ON SOLID WIRE.

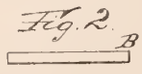
AS IS KNOWN, the ordinary process of plating metal, in jewelry manufacture, consists first of covering a block of composition with a layer of gold and soldering or sweating it thereon; then of rolling the block to the desired thickness, curving the sheet obtained into a tube, the joint being soldered or not as is preferred; and finally of drawing the tube down into a wire. By this method, there is left in the center of the wire, no matter how finely it has been drawn a hole which prevents the making of a solid point at the end of a piece cut from the wire. In making a point it is customary to hammer the end flat and clip off a piece lengthwise, which goes into the scrap, subject to waste in remelting.

To obviate these objections, S. F. Merritt, the well-known manufacturer of eye glass holders, Springfield, Mass., has invented and patented (May 27, 1890,) the process described below, which produces a gold-plated rod which is solid and seamless, and not liable to cause waste of gold.

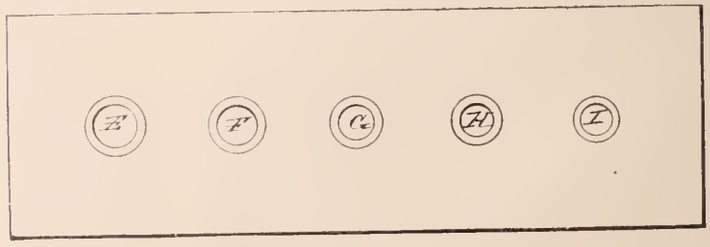
Figure 1 is a side view of the solid composition rod; fig. 2, an end view of the prepared sheet; fig. 3, an end view of the tube ready for the reception of the solid composition rod; fig. 4, a top view of the solid composition rod inserted within the tube; fig. 5, a front











view of the draw-plate. Letter *A* represents a solid composition rod; *B*, a thin sheet of gold; *C*, the tube formed thereof; *D*, the joint between its edges; *E*, *F*, *G*, *H*, and *I*, holes of different diameters in the draw-plate.

The first step of Mr. Merritt's improved method is to cut prepared sheet *B* into widths proportionate to the size of solid com-

position rod *A* to be covered; the sheet is then curved about the composition rod, leaving an open space or joint *D* between the edges of the sheet. After pickling and cleaning rod *A* and sheet *B*, the rod is re-inserted within tube *C* and a piece of silver solder laid in the open space or joint between the edges of tube *C*. Flowing the solder fills the space between rod *A* and tube *C*, leaving the joint open. Drawing this gold-covered rod through a draw plate, presenting successively diminishing holes of compression, gradually closes the space *D* between the edges of tube *C* until it is unrecognizable, obliterating the joint and leaving the edges apparently consolidated. This rod may then be drawn down through smaller and smaller holes to any desired fineness, and a pin-point made at any point of severance will be solid, as the rod and plate are homogeneous. The rod is left long enough to make a point for drawing, so that no gold is lost by clipping or filing.

IMPROVEMENTS IN ENGRAVING MACHINES.

Charles H. Field, Jr., was on May 27, 1890, granted a patent on several improvements in an engraving machine, patented by his father, Chas. H. Field, on April 30, 1889, and in use in all the principal watch case factories in the country. In this machine the engraving-tool is operated by an electro-magnet produced by a current of electricity from a dynamo; and another electric current of much less intensity controlled by the pattern-plate is used to govern the electric current between the dynamo and the electro-magnet that operates the engraving-tool. By the use of this lighter current the greater part of the injurious effects of the sparks produced between the tracer and the pattern-plate are avoided, but enough still remains to make an improvement in that respect desirable, and this is the object of the son's invention. It is accomplished by using an arrangement of mechanical devices operated directly by the pattern-plate to control the operation of the electric current between the dynamo and the electric current magnet operating the engraving-tool.

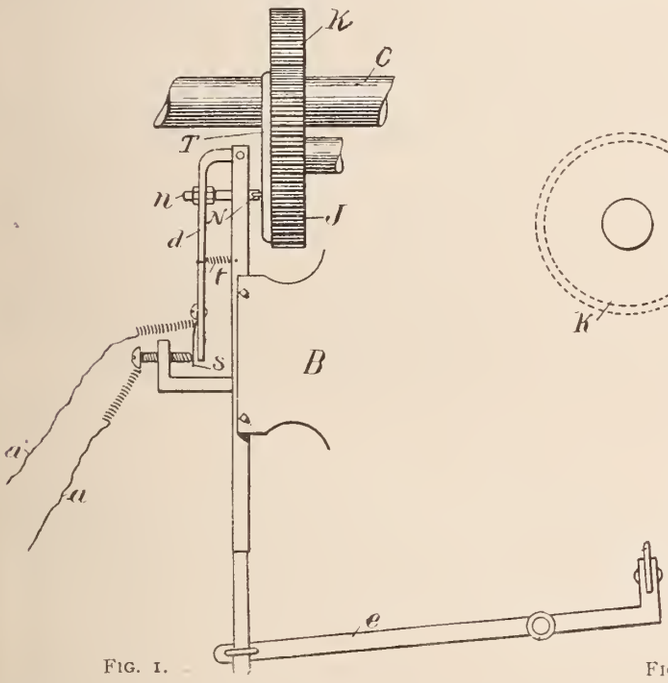


Fig. 1.

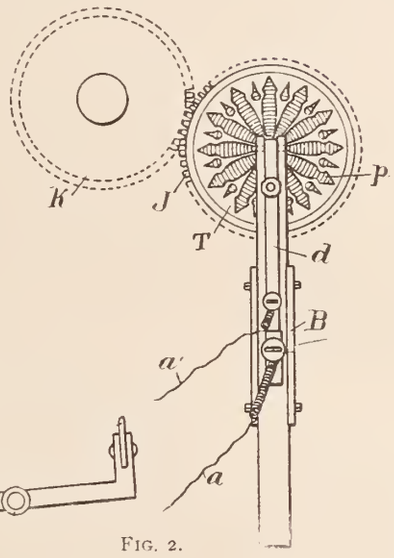


Fig. 2.

Figure 1 shows in elevation that part of engraving machine comprising the pattern-plate, and the devices used to control the current from the dynamo to the electric magnet. Fig. 2 is a front view of the pattern-plate, and the tracing devices connecting it with the electric wires.

C is the main shaft of the machine, carrying the gear-wheel K, which engages with the wheel J, to which the pattern-plate T is attached. An arm B, extending out from the stand supporting the gear-wheel J and shaft has a dovetailed groove made in its face, in which a bar is fitted to slide smoothly and easily up and down by means of the lever *e*. A lever *d*, having its upper end curved in and pivoted in the upper end of the bar, has a stud *n* secured to it near its upper end, which projects in through the bar toward the pattern-plate, and has a small friction-roll N in its inner end, which bears on the pattern plate, and is held up against the plate by a close spiral spring *t*, placed between the lever and bar, and arranged to draw the two together. The lower end of the lever has a spring attached to it, so placed as to bear against a screw, held in an arm attached to the bar, when the lever is thrown back. The screw is insulated from its arm and the spring from the lever to which it is attached, so that a current of electricity from the wire *a'*, connected with the spring, will pass directly through that spring and screw to the wire *a*, attached to the screw, when contact is made between the spring and screw.

The pattern *p* to be engraved may be made of paper or other suitable material and attached by gumming or otherwise to the face of of the pattern-plate, and no insulation is required, as the action is entirely mechanical, the operation being that when the roll N is on that part of the plate not covered by the pattern, the spring will be held just out of contact with the screw by the spring *t*, and the circuit through the wires *a' a* from the dynamo to the electro-magnet will be open; but when the plate T is revolved and a part of the pattern *p* comes under the roll N, the lever *d* will be thrown out, the spring *s* brought in contact with the screw, and the circuit between the dynamo and electro-magnet thereby closed, which will cause the electro-magnet to operate the engraving-tool, and when the pattern *p* passes out from under the roll N it will allow the lever *d* to be drawn back by the spring *t*, and the circuit broken at the end of the screw, throwing out of action the electro-magnet, and leaving the engraving-tool to be controlled by its spring.

The Nickel Movement Horologically Considered.

THE so-called nickel movements made their first appearance about fifteen years ago. The high luster which nickel is capable of assuming, and the tasteful stonings, engravings and arabesques which can be produced upon it, were the principal reasons for its favorable reception by the public.

These so-called nickel movements, however, are in no manner made of the pure metal, but of German silver, of which, as is known, nickel is a constituent; pure nickel is almost equal to silver in value.

When we sum up the merits and defects of these nickel movements we are forced to acknowledge that the metal is very liable to magnetic influences; it has also been proved that a screw thread is not as strong in nickel as in brass. For this reason it has been found expedient to put in coarser screws, that is, those with deeper and wider thread, and to lubricate before screwing in. Oil does not hold as well in the nickel oil sinks, as it does in those of brass, but it spreads easily. Repairers will have noticed that in many movements the barrel cover, and in the case of high grade watches, the entire barrel, is of brass or nickel-plated brass—a fact which shows conclusively that watch manufacturers have ascertained that nickel is not as good as brass for these parts. Another observation concerning these oil sinks has been made. Credible parties aver that holes in German silver become gradually smaller. For this reason the pivot holes of center and other wheels, if not jeweled, are at present made of brass

Ohio Jewelers Convention.

THIRD SEMI-ANNUAL MEETING OF THE OHIO WATCHMAKERS' AND JEWELERS' ASSOCIATION AT TOLEDO.

THE semi-annual convention of the Ohio Watchmakers' and Jewelers' Association, was held on June 10th, at the Boody House, Toledo, Ohio, President Henry Welf, of Cleveland, O., occupying the chair. About sixty members were present, among whom were the following: President H. Welf, Joseph Welf, Addison C. Collins, of Cleveland; L. F. E. Hummel, H. H. Mithoefer, Ing. Hengge, Jos. Daller, Jos. H. Lentz, H. H. Becket, Chas. Eick, of Cincinnati, O.; Ed. G. Lohmeyer, L. C. Eisenschmidt, Jos. Sauer, Harry Walton, of Newport, Ky.; Fred. Peiper, of Covington, Ky.; C. W. Hoen, G. R. Thompson, Thomas & Brand, E. L. Eutrikin, of Friendly, O.; C. J. Olin, Alvin Thoma & Son, of Piqua, O.; Jno. D. Smith, Union City, Ind.; Chas. Bassett, Waterloo, Ind; H. Fracus. White Water, O.; Henry Terheyden, Pittsburg, Pa.; C. P. Eells, Roulet & Baker, Chas. B Bargman, J. G. Kapp, M. Judd, of Toledo, O.; L. Lyon. of Wauseon, O.; J. M. Washburn, Celina, O.; C. A. Kellar, Middletown, O.; J. Pitman, Toledo, O.; W. Feeley, A. S. Goodman, Philadelphia, Pa.

The death of W. Jacobs, of Millersburg, O., a member of the executive committee, having been reported, Messrs. L. C. Eisenschmidt, H. H. Mithoefer and C. W. Hoen, were appointed a committee to draft suitable resolutions.

In the course of his report Secretary Lohmeyer called attention to the numerous evils and unfair conditions that the trade has to contend with at the prssent time, and offered many sug estions to correct the same, one of which was to co-operate with the jobbers in general, and agree not to buy from any manufacturer who sells to dry goods houses, prize package concerns, or newspapers. Lottery watch clubs were especially mentioned, and the successful prosecution of the same in Cincinnati recently, was dwelt upon with satisfaction. Other important matters that came up for consideration, were the answer of the National Jobbers' Association, that of the express company and the United States Mint Reports of Assays The secretary also called attention to the necessity of incorporating the association, the advisibility of meeting annually instead of semi-annually, and of employing solicitors to bring before the jewelers in general, the advantages of the association.

The following new members were received by the secretary in the last half year: H. A. Bedel, Jackson, O.; Chas. Cook, Cincinnati, O.; Ed. Beardsley, Ottawa, O.; Brunner Bros., Cleveland, O.; Chas. Bassett, Waterloo, Ind.; Chas. Diefentach, Jr., Hamilton, O.; Chas. Reinstatler, Cincinnati O.; L. W. Lewis, Cleveland, O.; Frank McGuire, Jamestown, O.

The treasurer's report was then read and accepted, after which on motion the rules were suspended and the following applicants elected: J. P. Hall, Lima, O.; Thomas & Brand, Findlay, O.; Christ. Manthe, Jr., Cincinnati, O.; E. L. Entukin, Findlay, O.; C. P. Eells, Roulet & Baker, Chas. B. Bargman, J. G. Kapp, M. Judd, Toledo, O.

The assay committee report was read and accepted and ordered spread on the minutes. The committee had assayed rolled plate chains of different makes. President Welf was presented with the gold obtained from the same to be used for a charm.

By a vote of 28 yeas and 8 nays, the convention decided to meet annually instead of semi-annually.

The committee of assays, Messrs. Lohmeyer and Mithoefer, were instructed to assay further chains and strip silver plated ware.

The committee on resolution on the death of W. Jacobs, reported as follows:

TOLEDO, O., June 10, 1890.

Whereas in the wisdom of the allwise providence, our brother jeweler W. Jacobs, of Millersburg, O., has been called from our midst, and we thereby have lost an attentive and conscientious member.

Be it Resolved, That we hereby give expression of our loss to the association, and our deep sympathy to his family, that a copy of these resolutions be sent them, and be spread upon the minutes. Also that said resolution be published in the Watch Dial, the organ of the Ohio Watchmakers and Jewelers' Association.

LOUIS C. EISENSCHMIDT,
H. H. MITHOEFER,
C. W. HOEN.

By unanimous vote the action of the Cincinnati members in prosecuting Lottery Watch Clubs was confirmed, the expenses of same allowed and a vote of thanks tendered those members engaged therein.

A committee was appointed by President Welf to draw up a new constitution and by-laws, and to report at the next meeting for approval. On motion it was agreed to appoint on that committee members within fifty miles of Cincinnati, in order that they might meet conveniently. A committee of five was appointed as follows: Edward G. Lohmeyer, L. F. E. Hummel, H. H. Mithoefer, Frank Hershede and Samuel B. Duncan. Various communications were received and acted upon.

A proposition for amalgamation from the National Jewelers' Association was made by President Goodman in an able address, and that with several other propositions, was laid upon the table.

The following amendment to the by-laws was then made:

I. All retail jewelers are eligible to membership (pool privilege included) so long as they keep a legitimate retail jewelry store.

II. All honorary members on whom the honorary membership has been conferred by this association, shall not be entitled to receive the benefits of the pool or the Guild goods without first reapplying, and becoming active members. Unanimously carried.

A committee on consultation with the Jobbers' Association was appointed as follows: L. F. E. Hummel, Edward G. Lohmeyer and H. H. Mithoefer.

The New York *World's* advertisement of Elgin movements and Fahy's cases was hastily condemned, and the President and Secretary were given power to act in drawing suitable resolutions.

A telegram bearing a vote of thanks was sent to the Dueber Watch Case Company, for calling the Association's attention to the same.

It was resolved to heartily co-operate with the National Retail Jewelers' Association. The secretary was instructed to procure the views of the different state organizations, and to arrange a meeting of delegates from the different associations. A certain proposition for the formation of a stock company was then considered.

The election of officers resulted in the choice of H. Welf, of Cleveland, O., President; S. W. Hoen, Findley, O., First Vice-President; J. G. Kapp, Toledo, O., Second Vice-President; Edward G. Lohmeyer, Newport, Ky., Secretary; H. H. Mithoefer, Cincinnati, O., Treasurer.

Executive Committee: Addison C. Collins, Ed. R. Kant, Cleveland, O G. M. Baker, Chas. B. Bargman, M. Judd, Toledo, O.

Committee on Counsel: L. C. Eisenschmidt, Newport, Ky.; J. D. Smith, Union City, Ind.; Fred. Peiper, Covington, Ky.

Representatives to United States Jewelers' Guild: Henry Welf, of Cleveland, O.; C. J. Olin, Picqua, O.; John D. Smith, Union City, Ind.

Canton, O., was selected as the next place of meeting, and the date the second Tuesday in June. The *Watch Dial* was declared the official organ, and the usual vote of thanks was passed to the Boody and Burnet houses, the press and to the Toledo members.

BARGAIN-COUNTER EYES.

[*From Chicago Times.*]

OCULIST—You have strabismus in one eye and are near-sighted in the other.

PATIENT (sardonically)—Yes, and if I had a third I've no doubt I'd be stone blind in that.

THE OTHER SIDE OF LIFE.

HER TASTE IN JEWELRY.

She loves above all things
A half a dozen rings,
To decorate her fingers and catch the roving eye;
She dotes on silver bangles,
And ev'rything like spangles,
To wear about her wrist, or neck to beautify.

A chatelaine unique,
With pendant *á l'antique*.
To dangle from a queen chain makes her heart rejoice;
While bracelets by the dozen,
From all her friends she'll cozen,
Those pretty bright cut silver ones are now the moment's choice.

A brooch with a miniature?
A kiss will win it sure,
She'll wear it with the pride that queens of old assume;
While for a silver garter,
Her winning smiles she'll barter,
Though worn from view—at least 'tis proper to presume.

Trinkets as vinaigrettes
Pungents and gantelets,
She thinks so charming she would like to have a score;
For hairpins and for lockets
She'll empty George's pockets,
And make the youth go beg for dinners evermore.

In fact!
In the product of the 'Boro',
She'd make an awful furrow,
And work the hands vacation through to make her diadems;
While the output of New York,
Of Providence and Newark,
Would hardly sate her appetite for jewels and for gems.

B. F. S.

WHEN MERCHANTS HAVE MONEY.

SALESMAN—I suppose you will allow me to sell Broke, Upp & Co?

PRINCIPAL—I'm somewhat afraid of their credit, Mr. Valisse.

SALESMAN—But you know they failed about a year ago, and settled at ten cents.

PRINCIPAL—Is that so? Then they must have money. Sell them all you can.

CAME OVER WITH THE CONQUEROR.

MRS. MICHIGAN AVENUE (of Chicago)—I would like you to engrave my coat of arms on the seal of this ring.

JEWELER—Yes, madam. What does it consist of?

MRS. MICHIGAN AVENUE—Ah! I leave the selection entirely to you; only put a lot of lions in it and a charming dragon or two.

BOTH LIKE.

"I look gilty,"
The brooch from Attleboro sighed;
"I look guilty"
The thief who pocketed it replied.

A BUSINESS-EYED GIRL.

TIMPANY (Jeweler)—Say, Bobby, come here, and tell me, like a good little boy, if you ever heard your sister, Gwendolin, say anything about me.

BOBBY—Yesterday she said to mamma, that it would be a good thing for you if you married her, as then the wedding ring would cost you nothing and all her friends would buy the presents at your store; and perhaps you might sell them afterward.

WHERE DIAMONDS GO.

TJERRY—Did yer git a peek at the swell ball at de Lazarus Hotel last night?

TJIMMY (who had stood on the sidewalk outside)—Yep.

TJERRY—Yer must 'a seed tousands 'a diamons'.

TJERRY—About two hunded.

TJERRY—Dat all?

TJIMMY—Der yer mean der hotel clerks, politicians and all?

JJERRY—Yep.

TJIMMY—About two tousands.

BOTH CAN DO IT.

At the Art Gallery:—MISS ALICE—That silver vase yonder is one of Benvenuto Cellini's masterpieces. He must have been one of the greatest geniuses of his time.

MR. VERISOFT—He was; besides being a goldsmith, he was a sculptor and painter. It is said of him that with but a few strokes he could change the whole expression of a countenance.

BOBBY(the enfant terrible)—Papa can do that with only one stroke.

BY HIS COMPANY, ETC.

BOWLES—I have always had a high opinion of Fassett. I've ever considered him a candid, open-hearted, honest, generous and loyal fellow.

KNOWLES—Yes; even his watch has an open face.

WHY NOT.

At Moreham's, the Silversmiths:—MR. MAGNUS SCOTT (in deep mourning)—Can you show me a fine specimen of silver crematory urns for the ashes of a dear friend?

SALESMAN—I am sorry we have none at present in stock; but I can show you some elegant dead silver vases, which may answer your purpose.

SHOULD BE SATISFIED.

TUGGS (excitedly)—This ring I bought from you a week ago for 18 karat, I have been told is one-third alloy.

BUGGS (jeweler)—But, my dear friend, consider how much gold there is in it.

HIS TASTE.

JEWELER—On this watch case, would you like to have a monogram?

MAGNUS SCOTT (subject to absent-mindedness)—Monogram? Well, I prefer Monongahela.

BOUGHT THEM ALL BRACELETS.

And now the festive social man,
June weddings being over,
His banking-book doth closely scan,
And finds he's not in clover.

'TWAS EVER THUS.

MINIMUS (the new boy, of an inquiring turn of mind, to employer)—Why, Mr. Maximus, did that young man who just went out blush and stammer so while looking over that tray of rings?

MAXIMUS—What did he buy?

MINIMUS—An engagement ring.

MAXIMUS—That's why he blushed and stammered so.

RANDEL, BAREMORE & BILLINGS,

—IMPORTERS AND CUTTERS OF—

DIAMONDS,

AND MANUFACTURERS OF

DIAMOND JEWELRY.

1 St. Andrews St.,
Holborn Circus.
LONDON, E. C.

1 Tulp Straat,
AMSTERDAM.

58 Nassau Street,
29 Maiden Lane,
NEW YORK.

TRADE GOSSIP.

—A. J. G. Hodenpyl, sailed for Europe, June 21st, by the steamer *Amsterdam.*

—The American Watch Tool Co. from June 21, to August 3, will give their employees Saturday afternoons.

—George W. Street of George O. Street & Sons, has rented his cottage at Shelter Island Heights to J. B. Edson, and has taken his family to the Dean House, Lake Mahopac, for the summer.

—Clifford J. King, of the Julius King Optical Co., sailed for Liverpool on the 19th of June, on the steamer *City of New York.* Mr. King goes in the interests of his firm and will remain abroad about three months combining business with pleasure.

—Ludwig Hirsch, representing Koch & Dreyfus, 22 John street, returned from Europe on the 15th of June, having made large purchases of diamonds and fancy stones for the fall trade. Retailers should send in early and get the pick of these importations.

—Glass manufacturers in general close July 20th for the annual shut down of six weeks, imposed by the operatives. The Mt. Washington Glass Co., of New Bedford, Mass., would like to impress upon their friends and customers that it behooves them to anticipate their wants now.

—Mr. Rooney, Chicago manager of the Kenosha Watch Case Company, reports business far ahead of last year. The Kenosha Co. will shortly place on the market their new "Badge" filled watch case which, it is claimed, will be superior to any filled case at present on the market.

—Roy & Co., manufacturers of watch cases, 63–77 Clymer street, Brooklyn, are showing to the trade a full line of fancy engraved cases, as well as the usual stock of staple goods. They are well satisfied with the reception they have met with in the market, and are preparing to enlarge their line.

—The Wm. Rogers Mfg. Co., of Hartford, Conn., have sold goods for twenty-five years, stamped "Rogers Nickel Silver." Lately they found that goods bearing that stamp were being sold at less than the regular prices, and upon investigation they found that Hall & Elton were making goods so stamped, and upon their complaint Judge Carpenter, of the Supreme Court of Connecticut, has issued an injunction restraining Hall & Elton from making, marking or selling any goods so stamped.

—Mr. George F. Kunz, with Tiffany & Co., starts about the 1st of July, on an extended trip through the middle and western states as far as the Pacific coast, for the purpose of collecting statistics on the finding and cutting of precious stones both American and foreign. He will be absent several months on this mission, and we hope that any of our western readers who are in possession of facts of interest will communicate with Mr. Kunz, addressing him care of the Eleventh U. S. Census, Washington, D. C.

—Hipp Didisheim, importer of watches, 83 Nassau st., New York, has just received a large invoice of his well known "Mignon" and "Gem" ladies chatelaines, containing numerous novelties in the way of oxidized and inlaid gold decorated cases. Mr. Didisheim has also received a new stock of the celebrated "Nassau" movements, of which he is the sole importer. These movements are made to fit perfectly 4, 6, 16 and 18 size American cases. These several lines of goods are among the most popular of their class in the country, and are worthy the inspection of every dealer.

—One of the most rousing send-offs that was ever given to an outgoing jeweler was tendered to Mr. Ludwig Nissen on June 17th, when with his wife he set sail on the Hamburg for the fatherland which he had not seen for seventeen years. Mr. Nissen will remain abroad for several months inspectiug the markets and making purchases of diamonds for the fall trade. The friends who crowded into the cabin to bid him farewell were so numerous and so enthusiastic that all the fellow voyagers seemed friendless and forlorn by contrast. Floral offerings of every conceivable form lay in profusion about the cabin. The recollections of his adopted land will be so rosy and fragrant therefore, that there is little danger of Mr. Nissen's delaying longer than is absolutely necessary in the land of his sojourn.

—The Derby Silver Company, 25 Maiden Lane, New York, have leased the entire store at that address, and will shortly display a more complete line of goods than heretofore.

—The Chicago Horological Institute is in a flourishing condition. Every bench in the workrooms is occupied at present, and a new lot of benches, foot-wheels, etc., are being put in to accommodate prospective students. The rooms of the institute, occupying as they do the entire tenth floor of a very high building, a system of ventilation is possible, which is appreciated very much by the students. President Frink is well pleased with his change of location. The offices of the institute have been treated to a new suit of beautiful embossed wall paper and decorations generally. The private office of Mr. Frink is fitted up in keeping with the disposition of its genial occupant. The school now numbers about seventy-five students, and a number of others have just secured admission and will soon be on hand to commence work.

—Lapp & Flershem announce that they will soon issue their new tool, material and jewelers supply catalogue, with the recipient's name and address stamped on the cover. They claim that it will be the most complete and best arranged volume of its kind ever published. Particular attention is directed to the portion of the work relating to their complete line of watch materials, embracing American and foreign, and occupying 174 pages; also to those pages treating of entirely new cabinets, watch case material, electro plater's supplies, electrical appliances, demagnetizers and jewelry stones, jewelers' findings and materials, optical goods, compasses, etc. This firm have just issued an interesting circular displaying prices, illustrations and descriptions of field glasses, telescopes, compasses, eyeglasses, spectacles, magnifying glasses for miners and botanists, barometers, etc.; also one of new articles and specialties. All dealers should send for these.

—Frasse & Co., the jewelers and machinists supply house, who have been established at 92 Park Row, for over fifty years, say that the volume of business of the past year was the greatest in their history, and that everything points towards the anticipation that the close of 1890 will show a still further increase. This firm have just received a large shipment of Stubs files, tools and steel, of which they make a specialty, though they sell everything needed in a jewelry shop from a buff to a rolling mill. An article for which they are having a heavy demand is their Sterling chasing hammer, which having been on the market about a year, and been thoroughly tested, has been acknowledged to be eminently satisfactory. Chasers having experienced considerable trouble with Stubs hammer, the face of which is of steel, while the body is of iron, on account of the face chipping away, Frasse & Co. produced their Sterling hammer, which is made entirely of steel. It is made in any weight from 1 to 8 ounces, and with either round, flat, or extra wide faces. It is handsomer than the older style, and in price is the same.

— On June 17th, an injunction was granted in favor of the Wm. Rogers Manufacturing Company, of Hartford, Conn., restraining the Rogers & Hamilton Company, of Waterbury from using certain labels, and trade marks similar to those which had been in use for some time by the Wm. Rogers Co. These trade marks were "Rogers A I," and "†Rogers A I." The Rogers & Hamilton Company then changed their stamps to "Rogers & H. Co." and "†Rogers 12," whereupon another injunction was issued restraining them from making or selling these goods. The complainants, however, discovered that these goods were still being put upon the market, and further proceedings were instituted resulting in the fineing of the Rogers & Hamilton Co., in the sum of $500. They are also ordered to pay the costs of prosecution amounting to over $800, and were further enjoined from using as a trade mark the words "Rogers' German Silver," which for years has been used by the Wm. Rogers Manufacturing Company, on a certain grade of German silver spoons. (In reference to this injunction and judgment the Rogers & Hamilton Co. state as follows: "The William Rogers Mfg. Co. were granted a temporary injunction during vacation of court on certain brands we were using, all of which we claim a right to. However, being law-abiding citizens we discontinued the use of all marks covered by the injunction besides some similar marks not so covered and discontinued the sale of all such goods at once, with the exception of one unfilled contract which was completed and contained some $2,000 worth of goods covered by the injunction. For completing this contract the court fined us for contempt $500 and costs. The main case has not been brought before the court, and our right to the trade marks, brands, etc., is a question to be decided, and we fully expect will be settled in our favor.")

—Gurdon W. Hull, general manager of Simpson, Hall, Miller & Co., sailed for Europe early in June.

—Mr. Jacot, Sr., of the firm of Jacot & Son, importers of musical boxes, sailed for Europe on the Rotterdam steamer *P. Caland* to be absent about two months.

—H. E. Beguelin, of Cross & Beguelin, 21 Maiden Lane, New York, with his family, left the city for a six weeks' vacation in the northern part of New York State, stopping at Cape Vincent, Thousand Islands and other places.

—Taintor & McAlpine, of Easthampton, Mass., will hereafter prepay express on their watch-club outfits when cash accompanies order. C. O. D. orders will not be prepaid in forwarding. The firm are selling quite a number of machines to parties who are running clubs by other systems than theirs, and for those who desire it 70 or more numbers will be put in.

—The Crescent Watch Case Company last month commenced a suit in the City Court of Brooklyn, for $44,532.60, which they claim as damages due them from the city. The claim is based on the assertion that the company's factory at 227, 229 and 231 Wallabout street was flooded February 9 and 16, July 9 and August 8, 1885, and at various other times since then, on account of the carelessness of city officials. The damages claimed are due to the washing away of sweeps by the overflow of a sewer.

—The Riley-Osborn Manufacturing Co., open the fall trade with many novelties in brass and silver finished goods, the latter of which compare favorably in appearance with solid silver goods, and are of course much cheaper. The new repoussé goods, which were all the rage in Paris last winter, are reproduced by this firm, and will, we think, become popular. See their advertisement on page 91.

—Charles Jacques, 2 Maiden lane, New York, is receiving his goods for the Fall trade. Shipments have already been started, and invoices arrive every week. Mr. Jacques is undoubtedly the most extensive importer of clocks in the country. Dealing exclusively in this class of goods and his stock embracing all the finer classes of foreign makes, this is naturally so. His newly arranged store is extremely attractive and the good judgment exercised in the displaying of the goods enhance their natural beauty. Prominent to view are unusually extensive lines of carriage, marble and bronze clocks and gilt regulators.

—Fred. D. Steck, whose office is at 4 Maiden Lane, New York, is managing agent for an effective polishing agent known as "Silverine." A thorough test has proved it to be undoubtedly a better cleaning and polishing agent than any other similar preparation. It is eminently adapted for cleaning watch dials from tin tarnish, and is said to act better than oxide of tin, which is commonly used for that purpose in the watch factories. Its principal uses are in polishing silver, nickel, gold and plated wares, and glass. It is warranted not to scratch the finest surface.

—It is with regret that the death of Sarah Adaline, wife of Isaac M. Miller, late of Miller Bros. & Co., is announced. The death took place on the morning of June 3, at the family residence in East Orange, N. J. Mrs. Miller having been an invalid for several years, had been quite closely confined to her home. She was an example of those domestic and womanly virtues which so beautify and adorn the true wife and mother. While thoroughly devoted to her family, kindness and hospitality were ever extended to her friends, and no poor person went hungry from her door. From her youth to the close of her life she was sustained by a strong faith and sincere devotion to her religion, and her last coherent words were an earnest appeal for the blessings of heaven on her family. Her husband and three sons mourn her loss.

—The manufacturers of the celebrated "Princess" initial ring have issued an attractive and convenient pocket catalogue, which contains a number of the leading styles of that famous manufacture, and also some patterns of their fine onyx and Knights Templar charms, and Thirty-second Degree emblems and rings and real stone Knights of Pythias emblems. A glance through its pages will elicit words of praise. Every article in this little volume has a number, and to obtain these goods it is only necessary to send the numbers desired to any jobber of jewelry in the country. This usef ullittle pamphlet, in addition to other things contains numerous complimentary notices on these well-known goods. The makers announce that machinery and tools are being made for producing a new patented interchangeable initial ring, which will be placed upon the market at a low price, and it is claimed will be the best, simplest and most satisfactory thing of the kind that has ever been made.

—John B. Yates, dealer in American watches, 191 Broadway, New York, will be among the houses that will close on July 5.

—Perhaps in no previous season has the demand for horse timers been so heavy as at present. Cross & Beguelin, 21 Maiden Lane, New York, who make a specialty and carry a large stock of these goods, are far behind their orders.

Ex-foreman Berlin, of the Waltham factory, has opened business at 106 Liberty street, New York, with a Mr. Scott, under the name of Berlin & Scott. They will carry on the business of mechanical engineers, and will make a specialty of damaskeening and fancy stoning, plating on watch movements, jeweling and jewel-making. One of the branches of the business will be to furnish working drawings for watch machinery and astronomical instruments.

—James A. Metcalf, formerly connected with the Meriden Britannia Co.'s New York house, but recently with Simpson, Hall, Miller & Co., has resumed his connection with the former company, and will in the future act as assistant manager of the Union Square establishment. At the reorganization of the Union Square store of Simpson, Hall, Miller & Co., the Meriden Co. offered Mr. Metcalf a position in their own store, and as there was no office open fitting his abilities, that of assistant manager was created.

—During the last couple of months, the Meriden Britannia Co have scarcely been able to satisfy the demand for candelabra for dinner table decoration. The demand has been unprecedented, and caused the company to produce numerous novelties, the latest being a low candelabra, adapted to a small table, and made with two, four and five lights. They are in old English designs and are extremely attractive. Another beautiful novelty in this line is a candlestick, with lamp attachment, having a pretty silk shade. Exceedingly handsome is an old English bright, embossed tea set, in oblong shapes, which the company have just produced ; also, a line of folding mirrors in etched gold and silver designs; the leaves, besides folding, are pivotted, and may be revolved. The Meriden Company, in preparation for the fall trade, are turning out large quantities of new goods, especially in such lines as toilet and manicure sets, and ornamental wares. The leading styles of finish at present are heavy repoussé or flower embossed, Louis XVI, and rococo embossing.

—The patent scarf holders manufactured by John A. Riley, 860 Broadway, New York, have this season entered upon an era of success which is equal if not greater than that of last year. These useful and ornamental articles are eminently adapted to the style of men's dress peculiar to the season. The Grecian fillets, or tiaras, which Mr. Riley recently placed upon the market, have met with the success which such magnificent trinkets deserve. They have proved the most beautiful articles in hair ornaments. These goods, together with the manufacturer's regular lines, gold and silver bead necklaces, hairpins, miniature and other brooches, scarf pins, bracelets and queen chains, are alone sufficient to constitute an extremely interesting stock. But Mr. Riley is truly a leader of styles ; he has always a number of novelties worthy the attention of the trade. He has just produced a line of brooches composed of wreaths of forget-me-nots designed in various shapes, stars, crescents, horseshoes, hearts, double hearts, etc. Some have a diamond in the centre. They are made in 14-k. Roman gold. Their usual beauty, combined with their medium price, will cause them to become popular. The idea is carried out also in scarf pins. Other pretty novelties are bow-knot scarf pins and forget-me-not scarf pins with coral ball centres. Coral in jewelry is expected to be soon very popular, and the latter class of goods will undoubtedly find a wide sale.

—The Gorham M'f'g Co. had on exhibition last month at their main office, Broadway and 19th Street, New York, a magnificent banquet service, made for the Auditorium Hotel, of Chicago. The service consists of a centre piece, together with four large fruit dishes, and twelve smaller compotiers. The centre piece, five feet five inches long, and three feet, five inches high, is an original design embracing a happy combination of the styles of the First Empire with the Louis XVI. The vase, intended to hold growing ferns, is an oval broken by two circles in outline, and is in open relief work supported by six beautiful modelled and chased figures—three mermaids and three mermen. In the centre of the base is a dome, on which stands a very beautiful jardiniere for the flowers. From the centre of this dish arises a graceful female figure, completing what may be considered a perfect masterpiece. The four fruit dishes and twelve compotiers are in harmony with the centre piece, both in design and finish, and the whole service as it stands is undoubtedly the most elaborate, complete and elegant ever made for the purpose. This banquetting set is in addition to the very large regular table service now in use by the hotel made for them by the Gorham M'f'g Co., which is of a unique and entirely exclusive design.

WHAT THE TRADE SAY OF THEM.

We like the Anti-Swear above all others.

Respectfully,

J. W. Hull & Co.

Grafton, W. Va.,
Nov. 20, 1889.

Everybody using the Anti Swear Button says it is the best yet.

Very truly yours,

George W. Frost.

Sioux Falls, D. T.,
Oct. 25, 1889.

Rochester, Pa., March 8th, 1890.

Mess. J. T. Scott & Co.
4 Maiden Lane, N. Y.

Gentlemen :—When in your store in Sept., 1888, you gave me a pair of *Anti-Swear* Sleeve Buttons for my own use which I have worn ever since and I really think they work better now than when new.

After explaining the working of the different buttons to a customer I invariably sell a pair of Anti-Swear. I am very much pleased with your latest designs.

Very truly,

J. Linnenbrink.

I can endorse the Anti-Swear as the best I have ever seen.

Yours, &c.,

A. C. Collins.

Cleveland, O.,
June 5, 1889.

The Anti-Swear will take first place when once known to the trade.

Very truly,

F. C. Miller.

Belvidere, N. J.,
March 22, 1889.

Washington, Ind.,
Jan. 4, 1890.

Mess. J. T. Scott & Co.,

Dear Sirs :

I have tried your Anti-Swear Cuff Buttons during the holiday trade just closed, and find them good sellers, in fact I could sell no other kind when they were shown.

They are simple, strong and durable, and will, I am satisfied, prove to be the button of the future. I have a pretty full stock of other kinds at present but will work them off, and keep nothing but the Anti-Swear.

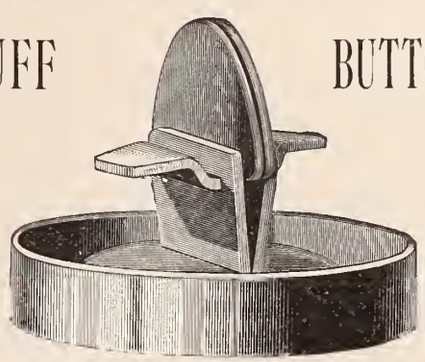
Yours, &c.,

N. H. Jepson.

THE

ANTI-SWEAR

CUFF BUTTON.



OPEN.

ENDORSED BY THE

OHIO RETAIL JEWELERS' ASSOCIATION.

Knoxville, Iowa,
Nov. 22, 1889.

Mess. J. T. Scott & Co.,

Dear Sirs :

I bought a stock of your Anti-Swear Buttons in the spring and put them in with my other goods The Anti-Swear are all gone and the others still remain. *They sell at sight and at good profit. I highly endorse them and the way you have taken to keep them in the legitimate trade.* Send me an assortment by first express, also eight or ten show cards and cuts like enclosed.

Respectfully yours,

D. A. Curtis.

THE ONLY LINE OF CUFF BUTTONS IN THE MARKET

SOLD EXCLUSIVELY TO THE RETAIL JEWELRY TRADE.

We are now making a large line of these Buttons in Rolled Plate, Gold Front and Solid Gold. ☞ *Orders for Selection Packages Solicited.*

J. T. SCOTT & CO.,

SOLE MANUFACTURERS,

4 Maiden Lane, New York.

—C. S. Scott, of J. T. Scott & Co., 4 Maiden lane, New York, is expected home from his European trip by the *Majestic*, either on the 2d or 3d of July.

—The W. C. Edge Co., Newark, N. J., are meeting with great success in introducing their new "Quatrefoil" necklaces, bracelets, etc., advertised in THE CIRCULAR. It is pronounced by all, one of the handsomest novelties of the season.

—The Senate Committee has amended the clause in the McKinley Tariff Bill referring to gold watches and cases, by leaving the duty on these goods at 25 per cent., instead of 40 per cent. as it was originally proposed, and reported to the House.

—Blancard & Co., of 36 John street, New York, have made up a new set of designs in addition to their extensive lines illustrated in their catalogue. It will pay manufacturers to turn over to the page in THE CIRCULAR on which their advertisement appears and examine their new designs.

—Alfred H. Smith, of Alfred H. Smith & Co., importers of diamonds, 182 Broadway, New York, sailed for Europe on June 7 by the steamer *Eider*. He will remain on the other side until the Fall Harrison B. Smith, of the same firm, is on his way home, and is expected to arrive on July 1 by the same vessel.

—The firm of Arnstein Bros. & Co , 37 Maiden Lane, New York, began the fall trade with one of the largest and best selected stocks that can be found in the market. Their line of jewelry is all freshly selected, and will prove salable goods. In watches and diamonds they can make as good rates as can be made anywhere.

—J. B. Wood, buyer for Charles F. Wood, importer of precious stones, left for Europe on the steamship *La Normandie*. Mr. Wood will, in the course of the next two months, visit all the precious stone markets of Europe, and will ship his purchases without delay to the New York house in time for the fall trade.

—For 58 years the refining firm, which now does business under the name of Chas. S. Platt & Co., occupied the offices and refinery 4 and 6 Liberty place. They have now erected a building adapted to the needs of the jewelry trade (part of which is now for rental) at 29 and 31 Gold street, near John street, into which they have moved.

—The increasing popularity of horse-racing throughout the country has created an unprecedentedly large demand for timing watches. A. Wittnauer, successor to J. Eug. Robert & Co., 30 Maiden lane, New York, who makes a specialty of this class of watches, has been and continues to do a heavy business in them. His stock of these goods has been increased for the emergency, and is undoubtedly the largest in the country.

—Henry C. Haskell, 192 Broadway (Corbin building), New York, maker of the only "razzle dazzle" puzzle ring, notwithstanding the hot weather, still sells these remarkable goods to the gold and silver dealers everywhere. As to class pins, class rings, etc., his sales this season has doubled those of last year. This should not surprise one, as the designs of these goods are strictly exclusive, the majority of them being copyrighted. Dealers who have not seen plates showing these patterns, should send for them, and if in need of any special article in gold or silver, out of the regular line of manufacture, Mr. Haskell will be pleased to submit special designs.

—This trade should write to the Spencer Optical Manufacturing Company, 15 Maiden Lane, New York, for their "special" on reading glasses and opera glass holders, which gives descriptions and prices of many novelties in this class of goods. Reading glasses in celluloid representing amber, tortoise shell, and ivory with oxidized silver handles are in unique and tasteful designs among this opera glass holders those with kid covered clamps are deserving of particular mention, this covering of the clamps prevents the possibility of scratching or marring the feature to which they are attached, and this absence of a spring and its liability to get out of order form another important feature. This company is awake and it will pay the trade to keep posted on what they are doing.

—J. H. French, the widely-known jewelers' auctioneer, on June 25, closed his sale of the bankrupt stock of Henry Rowlands, at 843 Broadway, New York. Mr. French disposed of this stock upon the order of the Supreme Court, at the unanimous recommendation of the judgment creditors, and as may be seen by the letter from Geo. Carlton Comstock, attorney for the latter, published in the advertisement of Mr. French in another portion of this issue, the sale was eminently satisfactory to the creditors. The amount realized was far more than was anticipated, in fact about double. Mr. French will this month conduct the mortgagee's sale of the stock of Jacob Weixler, Worcester, Mass., lasting ten days to two weeks.

—Charles E. Owen recently succeeded to the business of Owen & Condy, at 22 Main street, Stockton, Cal.

—In the last issue of THE CIRCULAR it was stated that the new factory of Hearn & Braitsch, the cane and umbrella head makers of Providence, would be completed about the middle of July. This is incorrect. The building will not be ready for occupancy until a month later.

—Retailers who want the latest novelties should send to their jobbers for the patent "safety pins," and the Henry M. Stanley and Joe Jefferson medallion bracelets in sterling silver. These goods are attaining a wide popularity, like almost everything that is originated by Foster & Bailey.

—C. Dorflinger & Sons, 36 Murray Street, New York, the well-known cut glass manufacturers, are displaying a very handsome line of water bottles and jugs of various descriptions. These goods are very popular now on account of their convenience as well as their beauty of pattern and purity of color. A good example, the "Kirafe," is illustrated in their advertisement in this issue.

—The latest novelty of the Pairpoint Mfg. Co. is a line of crystal glass berry dishes with silver plated mounts. These goods are very salable at present, and are reasonable in price. A motto that adorns the last leaflet of these patterns that has been sent to the trade reads thus: "Remember Pairpoint flat ware. It is not stale, but just as staple as wheat."

—Hollinshed Bros., jobbers of 806 Chestnut St., Philadelphia, Pa , through strict observance of their motto "wholesale only," and unremitting care and attention to the wants of the retail jeweler, are enabled to show a constant increase of business all through the spring and early summer. They feel convinced that they have struck the "right chord," and they will continue to preserve the same harmonious relations.

—The Sterling Co , have commenced the publication of a novel and at the same time a useful advertisement in THE CIRCULAR consisting of a reproduction of the beautiful calendar they sent out to the trade distinguished by a picture of two snow white doves with fan-like tails, the calendar being changed regularly to adapt it to the current month. The page can be cut out and pasted up in a conspicuous place in the store or office, where it will prove both ornamental and useful.

—The Waltham Watch Tool Co., Waltham, Mass., have a new patented method of making counterbores by machinery which is a great improvement over the old hand method. They are not only able to turn them out much faster but the counterbore produced in this way is much more true and easily sharpened than that made by hand. They have made preparations to manufacture these tools in large quantities and have already booked some very heavy orders from the watch factories.

—The Middletown Plate Company are ready with their new line of goods for the fall trade. The line is very complete and contains numerous new designs. The company have put forth every effort to make these goods superior in hardness of metal, in quality of plate, and in beauty of design and finish. Samples of these excellent wares may be inspected at their salesrooms, 22 John street, New York; 113 State street, Chicago, and 118 Sutter street, San Francisco, Cal.

—A man has been visiting a number of the jewelry establishments in Newark, representing himself as Mr. Oskamp, of Oskamp, Nolting & Co., Cincinnati, and selecting goods for that firm. Among those he visited were W. B. Kerr & Co. and David C. Dodd, Jr. The former at once telegraphed to Cincinnati for information and ascertained that no representative of the firm was in the East at that time. So far as ascertained no losses have yet been made.

—Lapp & Flershem—"the Busiest House in America," 92 to 98 State street, Chicago, Ill.—have issued a pretty little net price list of watch movements, cases, watches, staples, etc. Prices of all the principal makes of watches and cases are given, as well as a comprehensive list of prices for repairing and engraving. This firm's discounts are 6 per cent. off for cash with order, or when sent C. O. D., or when accounts are paid within 10 days; and 5 per cent. when accounts are paid within 30 days.

—Carter, Sloan & Co., 15 Maiden Lane, New York, recently received an order from Eugene H. Colson, of Nicaragua, C. A., to fit up for him a new and complete jewelry store with watches, jewelry. fixtures, etc. The goods were all prepared and placed aboard the steamship *Honda*. On the day set for sailing the ship caught fire and foundered carrying the entire cargo to the bottom of the river The portion shipped by Carter, Sloan & Co. was found unfit for use, and the firm were compelled to duplicate the order.

—It is said that the Coventry (England) Watch Movement Manufacturing Co. lost only $810 the first year.

—The "Security" key ring and chain manufactured by R. H. Ingersoll & Bro., 65 Cortlandt street, New York, is rapidly finding favor among the jewelry trade. Dealers who have not seen it are advised to send for samples.

—Jewelers who are contemplating the purchase of new fixtures or who may be fitting up an establishment anew, are referred to page 32 of this issue, where a very advantageous offer is made by the proprietor of one of the handsomest jewelry stores in the South.

—W. E. White & Co., 54 Page street, Providence, R. I., are showing to the jobbing trade this season a brand new novelty in the form of a real coral bead necklace, which from all indications will have a large sale, as fashion is again becoming enamored of the warm, soft tints of the coral. This firm also claims to manufacture the largest line of gold and silver serpent rings in the market, at prices, owing to improved methods, which cannot be duplicated, quality considered.

—Fowler Bros., manufacturers of the well-known English crape stone jewelry for mourning wear, have just issued a handsome pamphlet on mourning etiquette, which they are distributing to the elite of the country. The little book is a most artistic production from every point of view, and the directions in regard to mourning customs, which are all up to date, are written in a charming style and neatly printed, with tasteful indented captions in red ink. This little work will doubtless be accepted as a standard on this subject at once, and will still further increase the reputation and sale of the well-known "Fowler's English Crape Stone Jewelry." Fowler Bros. will cheerfully mail a copy of this treatise upon application.

—Charles Jacques, 2 Maiden Lane, New York, is receiving his goods for the fall trade. Shipments have already been started, and invoices arrive every week. Mr. Jacques is undoubtedly the most extensive importer of clocks in the country. Dealing exclusively in this class of goods, and his stock embracing all the finer classes of foreign makes, this is naturally so. His newly arranged store is extremely attractive, and the good judgment exercised in the displaying of the goods enhance their natural beauty. Prominent to view are unusually extensive lines of carriage, marble and bronze clocks and gilt regulators.

—No horological school has progressed so rapidly as that of Parsons & Co., at La Porte, Ind. A little over four years ago J. R. Parsons started his school on a somewhat small scale, as the idea of such an institute in this country was radically new. The school advanced from step to step, until it was found that more room was necessary, that more light was needed, and that to have everything just right with different rooms for different work, a building must be erected expressly for the school. This was completed in 1889 There is no end to the amount of tools that have been put into this institute, all of which are the latest and most improved. Over $20,000 have been invested in the enterprise. It has many advantages in board, and everything pertaining to watch work, clock work, jewelry work, optics and engraving, is taught in the best and most improved methods.

—On June 2, the Non-Magnetic Watch Company of America withdrew from the National Association of Jobbers in American Watches. They announce: First—that they will devote their time and energies more particularly to their sixteen size movements and ladies' and gentlemen's complete and complicated watches, of which they have a large and full line on hand; these movements are all non-magnetic and of the finest workmanship; their cased watches are in 14 and 18 karat cases, plain engine turned and decorated, and also silver decorated cases. Second—that their prices will remain exactly as they have been, and will be vigorously maintained. Third—that they will make every effort to protect the market by sustaining their customers and by proceeding against all infringements of their rights to the fullest extent of the law. Fourth—as all connection with A. C. Smith, their former selling agent, has been severed, he is not authorized to answer for or represent them; or to supply any of their watches or watch movements. The company are making all preparations to conduct a vigorous Fall campaign.

—The Roy Watch Case Co., have something to say on another page of this issue about hand engraving in comparison with machine stamping. They contend that there are three lasting and radical differences: 1.—Hand Engraving is "bright cut" and "red cut" to reflect the natural richness of the gold. Machine stamping is lifeless and requires coloring by acid or battery processes 2.—Hand Engraving will wear throughout the "life" of the watchcase: it is an integral part of it. Machine Stamping is but a surface imitation and will soon wear off, leaving the case in an unsightly condition. Hand Engraving is, above all, an artistic embodiment, in the metal or the soul and thought of the artisan. Like the artist, he loves his own creation and is bound to produce variety." Thoroughly impressed with the truth of these observations The Roy Watch Case Co have determined to do away with machine stamping and engraving in the manufacture of their celebrated cases, and now employ the most skillful engravers in the ornamentation of their cases. This means another step in advance by this progressive company. They believe there is a demand for a more artistic case among the American people than the machine can possibly produce, hence in their factory, they will give the artisan the important place he deserves.

—One of the notable events in the jewelry trade is the completion and placing on sale by any of the watch companies of a new movement. This has just been accomplished by The E. Howard Watch & Clock Co., of Boston, and in their case it is doubly worthy of comment on account of the higher grade of their movements. The new No. 1 movement we refer to has been produced in order to satisfy the demand for a watch which while possessing all the good running qualities of a "Howard" should be sold at a considerably lower price than any they have heretofore manufactured, and hence bring the celebrated "Howard" timepiece within the reach of a large class of persons who want an accurate time-keeper at a moderate cost. The new movement is exactly adapted to meet the wants of this class of purchasers and the demand for it is certain to be very large. The new movement may be described as an 18 size hunting case, of tasty design, containing all the special features of the Howard watch, such as the steel barrel, pendant winding and setting, patent regulator, etc. It is strong and durable and has a cut chronometer balance and tempered steel hairspring. The working parts are all finely finished. Retailers are particularly advised to place orders with their jobbers at once, as their own experience with the selling characteristics of Howard watches will dictate.

—On June 9, a delegation of 140 New York importers of different classes of goods went to Washington to protest before the Senate Finance committee against certain provisions in the McKinley Tariff Bill. Of this number only 28 gentlemen were allowed a hearing, among whom was J. W. Riglander of L. Hamnel & Co., 37 Maiden Lane, N. Y., who represented the interests of the importers of optical goods. Mr. Riglander made an elaborate argument against the proposed increase of duties upon spectacles and lenses The effect of the address was that the proposed tariff on spectacles, namely 50 cents per dozen and 35 per cent. ad valorem, making really a duty of from 86 to 335 per cent, was reduced to 60 per cent. ad valorem, the original tax being 45 per cent; that the proposed duty of $1 per gross on lenses costing $1.50 per gross pairs or less, was reduced to 60 per cent.; also that the proposed duty on eyeglasses and spectacle lenses beveled of 75 cents per gross pairs, and 45 per cent. ad valorem was reduced to 60 per cent. ad valorem. Among the other importers who addressed the committee was Isidor Straus of L. Straus & Sons, 42 Warren street, who stated that he represented nine-tenths of the importers of pottery and glassware in New York, through whose hands three-fourths of the imports into the United States pass.

Among the Watch and Clock Companies.

—A time lock company will probably occupy the Aurora Watch factory building.

—The American, Hampden and Rockford factories will have the same vacation, five weeks.

—Judge Wilson allowed Mr. Somarindyck $1.000 for his services in the Aurora Watch Company failure.

—The present production of the Elgin Factory is up to its fullest capacity, and still it is impossible to keep a supply of movements in reserve.

—It is rumored that A. Bitner is endeavoring to buy enough of the Lancaster Watch Factory stock to get a controlling interest. The factory is still shut down.

—The Dubuque (Ia.) Board of Trade have endorsed the action of the Mayor of the city in dealing with C. G. Shellenberger, concerning the proposed watch factory. A local newspaper, reporting the action of the Board, remarked: "This is the last of the watch factory."

—A meeting of capitalists was held last month at Chicago to back the project of erecting a watch factory at Spokane Falls, Washington.

—A Chicago newspaper is authority for the statement that the Cornell Watch Factory at Grand Crossing, Ill., which for years has been deceased, is to be re-established in that town.

—The E. Howard Watch and Clock Company have just placed as elegant tower clock in the new *Inter-Ocean* building at Chicago. It strikes the hour upon a heavy bell, and by night has illuminated dials.

—On the night of June 2t8h the United States Watch Factory, with the exception of the gilding, damaskeening and finishing rooms, shut down for a two weeks vacation. The specified departments closed for three weeks.

—The factory of the American Watch Company is to be lighted by electricty, an engine of 300 H. P. has been ordered to be used for the purpose. It will run additional motors, thus supplying the factory more generally with light.

—The Otay Watch Company claim that their factory paid expenses the first month of its operations, and say that their watch is received with favor throughout California. Eighty-five operatives are now employed, and acquisitions are being made daily.

—Leo Aeby, manufacturer of Paillard Non-magnetic Watches, sailed on June 26th, on the *Augusto Victoria*, for his home in Switzerland. We understand that Mr. Aeby intends putting his factories into A1 condition with a view of greatly improving his product.

—The E. N. W. Co., has secured $10:000 worth of stock in the World's Columbian fair. This shows that the company is alive to the importance of the enterprise, and we are assured by this move that something handsome, something quite beyond comparison in the way of an exhibit, will be prepared by this same E. N. W. Co.—*Elgin Every Saturday.*

—The Aurora Watch Factory troubles have finally been settled without litigation. In the county court, the assignment was declaired valid, and an order was made to pay the employees one-half in cash and one-half in watches. The banks are authorized to sell the collateral and apply the proceeds on their claims. A decree was entered for the foreclosure of the bonds.

—Charles S. McCulloh, receiver of the Non-Magnetic Watch Company of America has called a meeting of the creditors of the company for August 11th, at 2 o'clock at his office 177 Broadway, New York. All persons indebted to the company are requested to render, on or before July 17th, an account of all debts and sums of money owed by them to the company, and pay the same

—In another portion of this issue is advertised for sale the three-story brick factory of the late L. Hubbell of Forestville, (near Bristol) Conn. This factory has 8,200 square feet of floor surface and is completely fitted for manufacturing American clock movements of every description. The tools are also adapted for manufacturing electrical goods and supplies. All inquiries concerning this plant will be cheerfully answered by Robert N. Seyms, Adm., Hartford, Conn.

—Numerous orders for Otay waches have been already received, and the total product of the factory can easily be disposed of. Watches have been sent to Japan and Brazil, and large orders have been received from Mexico. A stockholders' meeting was held June 17th, and all the members complimented the superintendent, P. H. Wheeler, and his associate experts, and expressed themselves as highly gratified with the success of the watch from the very start. It was decided to put the company on a stronger financial basis and to increase the production. Large quantities of Otay watches in gold cases were on exhibition at the meeting.

—The Waltham Electric Clock Company has been organized at Waltham, Mass., with the following officers: President, Riley Pebbles; treasurer, Francis Bigelow; secretary, Frank M. Forbush; board of directors, Riley Pebbles, Francis Bigelow, James M. Forbush, Walter J. Dudley, S. Augustus Sweetland, Wm. D. Parlin and and O. A. Felch. The capital stock is $110,000 and 60,000 is taken by W. J. Dudley and W. K. Menns. New machinery to be furnished by John Stark of Waltham. and Brown, Sharp & Co., of Providence, R. I., is to be installed at once. At present the manufactory will be at Waltham, but as the owners are residents of Natick it is probable that unless Waltham parti-s buy some stock it will be moved to Natick.

—The Chicago office of the Elgin Company is being improved, neither pains nor money being spared in the work. When completed, the office will be one of the finest in Chicago.

—It is likely that no further building will be done this year, the recent rapid progress in labor saving machines increasing the product beyond proportion to the increase of workers.—*Elgin Courier.*

—The Dueber Hampden Watch Works are to receive a very large addition. Excavations have already been commenced. The machine department is having an extensive wing added. A large addition 86 x 23 feet, three stories high, of architecture corresponding with the balance of these magnificent works is also to be erected adjoining the south wing of the Hampden Factories, to give more room for the screw, steel, gilding, damaskeening and dial departments. These additions alone will be as large as some of the present small factory plants and show great progress in the business of watch making in Canton. It could hardly be thought that the large plant recently erected in that city, would have so soon to be further enlarged. The Dueber and Hampden Companies have nearly five acres in the rear of their present factories, on which to duplicate the factories now standing, which will no doubt be done within the next five years, as every indication clearly points to that result.

—At the annual meeting of the stockholders of the United States Watch Co., held last month at the office of the factory, the following officers were elected for the ensuing year; Prest., Thos. H. Eaton; Treas., E. C. Hammer; Clerk, J. E. Cox; Directors, E. C. Hammer, Thos. H. Eaton, T. F. Hammer, Granville Nutting and A. E. Hammer. It was voted to reject the offer of the English syndicate who wish to purchase the plant, and Treas., Hammer was authorized to act for the company should a further attempt be made to purchase the property. It was also voted to construct an additional factory building this year provided the company can secure from the city of Waltham assurance that the public land contiguous to the factory's three acre plot will not be built upon to the detriment of the company. Unless this assurance is received the officers are authorized to seek a location in some other city. The company's business of the year 1889, was the most prosperous in their history.

—The Seth Thomas Clock Co. have just closed a contract to furnish the immense new Knox factory building at the corner of Grand and St. Marks avenues, Brooklyn, N. Y., with a large tower clock with four dials, each eight feet in diameter. The clock will have gas attachment to light it up at night. The company have also just erected in front of the City Hall Pharmacy on Broadway, opposite the City Hall, New York, a handsome street clock with two dials, each three feet in diameter. The owner, with a view of making the clock a prominent feature on the thoroughfare, will combine with it a thermometer and a barometer, and will have a hooded light placed above it. The company have issued a handsomely covered book, devoted to discussion of their tower clocks. It contains valuable information concerning these mechanisms Dealers should possess a copy of this pamphlet. Every clock that leaves the company's factory has been run and thoroughly tested. It is the intention of the company not to offer the public clocks which shall be lower priced than those of other makers, but to produce in the future, as in the past, clocks which, quality and durability considered, shall be the cheapest in the market.

—The Waterbury Clock Co., who are always producing goods that interest the trade, have just placed upon the market several novelties which, if originality of design, combined with attractiveness, account for anything, must become popular. First, there is a useful and ornamental clock, called the "Paper Weight," which combines a paper weight and clock. The movement is enclosed in the case, which is of heavy material, like a compass; the setting and winding attachments being at the bottom, but safe from injury. Then there is the "Prod," of the same design as the "Paper Weight," but having a handle and feet and stands erect. Other pretty novelties are: The "Sire," an imitation of the grandfather's clock, 11½ inches high; the "Patsey," a separable clock that may be hung either on an outstretched hand of a typical Irish lad or upon the end of a shillalah which he carries upon his shoulder; the "Sailor," representing the figure of a seaman in the act of casting a line, the clock being set in the coil of rope he holds in his hand; the "Pilot," a man at the wheel, the clock being set in the center of the wheel. These latter clocks and settings are of bronze and the figures are unusually true to life. The company expect to have their new catalogue ready in August. It will contain illustrations of these pretty designs besides numerous others.



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THE JEWELERS' CIRCULAR
AND
HOROLOGICAL REVIEW.

OFFICIAL REPRESENTATIVE OF THE JEWELERS' LEAGUE, THE NEW YORK JEWELERS' BOARD OF TRADE, AND THE JEWELERS' SECURITY ALLIANCE.

It is also the Recognized Exponent of Trade Interests.

A MONTHLY JOURNAL DEVOTED TO THE INTERESTS OF WATCHMAKERS JEWELERS, SILVERSMITHS, ELECTRO-PLATE MANUFACTURERS, AND THOSE ENGAGED IN THE KINDRED BRANCHES OF ART INDUSTRY.

SUBSCRIPTION.—To all parts of the United States and Canada, **$2.00 per Annum,** Postage Paid. To all Foreign Countries, **$3.00 per Annum,** Prepaid.

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THE JEWELERS' CIRCULAR PUBLISHING CO.
189 BROADWAY, NEW YORK.
CHICAGO OFFICE, 125 STATE ST., ROOM 18.

☞ *Advertising rates made known on application.*

GOSSIP OF THE MONTH

☞ A full Index to Advertisements and a Table of Contents will be found on Page 5 of this issue.

"WHOM the gods would destroy they first make mad." The sky-scraping observatory which the New York *World* is building, of such stupendous height that the editor may seat himself in the tower and torment the public with the "license of ink" without fear of personal injury, is a good deal like the Tower of Babel. Confusion of tongues and confusion of ideas and morals seems to have fallen upon the builders. Symptoms of violent derangement are beginning to show themselves in the conduct of the great metropolitan daily. We refer to the *World's* selling American watches to its subscribers at jobbing rates, and, more particularly, to its branding the entire retail jewelry trade as "plunderers and robbers," a wanton and unjustifiable attack which even the *World* ought to be ashamed of. Liberty of the press is one thing; license is quite another. The *World* is not content with the ill-gotten gains of its cut-throat watch business. It adds insult to injury, and attempts to destroy the character as well as the business of the retail jeweler. The several columns of space that have been devoted each week to crying up these wares and maligning the jewelry trade, have fairly teemed with lies and misrepresentations. Such for example as the assertion that the retail jewelry trade make a profit of from 200 to 300 per cent. on the watches they sell; that repairers are accustomed to swindle their customers, that a profit of 34 cents is enough to make on the sale of a watch, etc., etc. Little harm would be done by such loose and extravagant statements upon the mind of an intelligent reader. But, unfortunately, the *World's* readers are not generally of this class. They belong to a class that is easily influenced and beguiled into a state of credulity that is very dangerous to the cause of truth, and, it is almost needless to add, their native wit has not been improved by a course of the highly seasoned personality this newspaper furnishes its readers. The *World* then appears in open and violent attack upon an entire trade, not only by offering a staple of that trade at wholesale prices, but by indiscriminately slandering its members, a trade which in all times and places has possessed the confidence and esteem of the community. Of course, any sensible man knows that there are black sheep in every flock. (There are newspapers that have not escaped the imputation.) It is not difficult to find jewelers or watchmakers who will resort to such practices as are described by the *World*, but to hold these men up before the public as fair examples of the jewelry trade is a malicious libel which should not be forgotten by the trade thus traduced. As to the *World's* statement of the profits of the retail jeweler on watches we know not how to account for their grossly exaggerated character, unless the circulation editor had a hand in the business. The retail jeweler has no monopoly of his business as the *World* claims. There is no organization among them for the regulation of prices, and while these differ considerably and may at very rare intervals be extortionate, the average profit is not excessive. The retail jeweler is not a mere distributor of goods. He is a specialist or expert, whose judgment is sought and paid for by the wiser portion of the watch-carrying public. He does a straightforward, legitimate business, and by virtue of his skill and knowledge of watches his opinion has a commercial value. (The *World* can surely understand this.) He is consulted as to the make or grade of a watch best suited to a purchaser's special wants, and in regard to many other matters requiring skill and experience to decide. For this he asks and receives a fair profit. His methods differ essentially from those of the journal that attacks him. He does not organize balloon ascensions, send lone females round the world, hawk merchandise at cost, to gratify his vanity or greed, nor print stories defamatory of the character and business reputation of others, in order to sell his goods. As to the *World's* statements about the repairing of watches they are simply wholesale misrepresentation. (It lies on the same terms as it sells watches). No one will deny that there are dishonest repairers, but to hold them up as fair examples of the trade is a more dishonest trick than any instanced by the *World*. And how could it be possible for repairers to charge such enormous profits as represented? Competition among them is very sharp and prices are continually being cut. On the contrary there is a strong feeling

among the trade that prices for repairs have been forced below a living profit and should be raised.

The *World* has still larger ambitions. Now comes the announcement that it is organizing a syndicate of about twenty of the leading weekly papers of the country to dispose of watches and other articles at or near cost. This magnificent cut-throat marauding expedition was foreshadowed in the following paragraph of a recent issue :

Why should not the press of the country combine to protect subscribers by becoming great purchasing agents, greater than any other, with better discounts, and supplying all standard necessities at "cost?" There are twenty newspapers which control the trade of one-half the population of the United States. Suppose they should form a public trust, for the public welfare, to curb the rapacity of the private trusts created by the protective tariff, what would be the future of such a trust wisely managed, and what would be the effect upon the developement of the newspapers?

If the *World* persists in this ridiculous free-booting merchandise scheme one of the so-called necessaries of life which it will probably sell at cost will be newspapers.

*** *** ***

AFTER the facts in the *World* case had obtained considerable currency, and protests from the retail trade began to multiply, the matter was brought before the sub-committee of the Jobbers' Association, and the following resolution was unanimously passed :

IMPORTANT! READ CAREFULLY!

No. 78.

THE NATIONAL ASSOCIATION OF JOBBERS IN AMERICAN WATCHES.

NEW YORK, July 15.

GENTLEMEN—Your attention is respectfully directed to the following important action taken by the undersigned this day :

WHEREAS, The interests of the retail trade are seriously and improperly interfered with by various newspapers which advertise to sell association goods (American movements and cases) at wholesale prices ;

THEREFORE, The members of the Jobber's Association are hereby notified, that it will be considered a breach of our contract to supply any movements or cases of our manufacture to such newspapers, and any jobber who does supply such goods, *directly or indirectly*, becomes liable, under the association rules, to the penalties provided for violation of contract.

MOVEMENT MANUFACTURERS.	WATCH CASE MANUFACTURERS.
American Waltham Watch Co.,	Bates & Bacon,
Cheshire Watch Co.,	Bay State Watch Case Co.,
Columbus Watch Co.,	Brooklyn Watch Case Co.,
Elgin National Watch Co.,	Crescent Watch Case Co.,
E. Howard Watch & Clock Co.,	Duhme & Co.,
New York Standard Watch Co.,	Joseph Fahys & Co.,
Seth Thomas Clock Co.,	Kenosha Watch Case Co.,
Trenton Watch Co.,	Keystone Watch Case Co.
	H. Muhr's Sons.

The above resolution, having been presented to the sub-committee, was heartily endorsed by them, and any jobber who, after this date, is found to have supplied any goods contrary to its provisions, will be dealt with accordingly.

Yours truly, JAS. H. NOYES, *Commissioner.*

Prior to the combined action The Elgin Watch Co. notified all its agents to be especially careful to whom they sold, in order to prevent their goods from getting into improper channels in the future. Joseph Fahys & Co. also sent out a circular to the retail trade, announcing their intention to sell no more goods to jobbers who either directly or indirectly sell to newspapers. It is to be hoped therefore that this action will be effective in cutting off the supply of association goods and preventing further injury to the retail trade.

*** *** ***

THE Government recently sent out a circular to chronometer manufacturers announcing a competition test at the U. S. Naval Observatory shortly, when eight chronometers will be selected. In view of this forthcoming test we take pleasure in laying before our readers an article by Lieut. Hiero Taylor, who is in charge of the Government time service, on the "Testing of Chronometers at the U. S. Naval Observatory." The style of the writer is remarkably clear and every line will be intelligible to the average watch maker. The different changes which have been made in the methods of testing chronometers are fully explained and intending competitors will do well to study the article with care.

THE Torrey Bankruptcy Bill has passed the House, and will probably pass the Senate if it can be reached before adjournment. It is a thoroughly sound piece of legislation and has received the approval of the business men of the United States. The objections that were brought against it during the debate in the House were of the most flimsy character, their burden being that the bill was against the debtor class. These were speedily disposed of, however, and we are in a fair way to have that much needed reform, a uniform bankruptcy law (uniform in its essential features).

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UNDER the present tariff laws compositions of glass, including imitation diamonds unset, pay a duty of ten per cent. The new bill proposes to assess compositions of glass at 45 per cent., and as the importers feared that imitation diamonds would be classified under this heading, they sent a delegation to represent them before the Senate, who showed that august body most conclusively that the manufacturers in this country are wholly dependent upon importations of these goods for the making of imitation jewelry, and that to increase the duty thirty-five per cent. would so much encourage smuggling as to place the honest manufacturer at a great disadvantage as compared with the unscrupulous maker. Besides, all hope of retaining and increasing the trade already established by our manufacturers with South America would have to be given up if by increasing the duty it was made impossible to compete with England and Germany for trade in this class of jewelry. It would give the business all to Europe, and to this extent deprive home labor of employment. They, therefore, prayed the Senate to leave the duty at the old figure of ten per cent. The gentlemen interested think they carried conviction to the minds of the senators, and expect the present duty will be retained.

*** *** ***

IN RESPONSE to that magnetic needle, the Silver Bill, silver has been steadily advancing since that misguided measure became a law, and silver-ware manufacturers have been correspondingly anxious. The rise in the raw material finally became so considerable that the prices of the manufactured product were raised. Sterling silver-ware is consequently somewhat higher now than formerly. As the limit at which the Government is authorized to purchase is fixed at about $1.30 an ounce, many think the price will advance still further, even if it fails to reach that limit. It would seem to be unwise, therefore, for dealers to refrain from purchasing their fall stock now in anticipation of a speedy decline in price. Everything points in the other direction.

*** *** ***

THE article "On the Device and Fastening of a Balance Spring," by M. Grossmann, is a posthumous work of the great horologist, which, we believe, has never before appeared in print on this side of the water. We count ourselves fortunate in being able to lay before our readers a new production from the pen of so distinguished a writer. If there is anything meritorious in the horological line to be had, however, we generally make it a point to get it at whatever cost.

*** *** ***

THE *Keystone* takes us to task for inconsistency in our editorial comments on the commercial travelers' cheap fare bill, charging us with disapproving of it in our June issue and approving it in our July issue. The latest petition to the committee of Congress, be it stated, does not seek the privilege of commercial travelers alone, but embraces also the theatrical profession. We certainly think the matter worthy of the attention of the jewelry trade, even in the form of the present petition to Congress, objectionable as that is, and in directing the attention of the trade to it failed to repeat our criticisms of the previous month. In neglecting to do this we justly laid ourselves open to criticism. Perhaps a bill giving the privilege of reduced fares to commercial travelers and the theatrical profession only would be an improvement upon the present condition of things, but from the standpoint of constitutionality and abstract right there is but one view to be taken of this subject, and that was fully explained in our editorial remarks of June—the right to buy railroad fares at wholesale cannot justly be monopolized by any association or class.



CHICAGO, July 20, 1890.

The intense heat of the past two or three weeks has caused a noticeable decrease in all classes of trade The jewelry business and its kindred interests have not escaped by any means but taking everything into consideration the failures reported are remarkably few.

It seems as though the World's Fair Commissioners had left a conundrum upon the hands of the directors which is going to come pretty near puzzling all. Their deciding to use two sites (a portion of the lake front and Jackson Park, was so indefinite that practically speaking no site was decided on at all.

F. E. Morse & Son, importers of diamonds, report trade good and probably ahead of last year.

The private office of Mr. Burchard has looked lonesome without its jovial occupant, the western manager for Simpson, Hall, Miller & Co., who has been east at the factory and other places for some time, including a sojourn at the seashore before returning home.

Mr. R. H. Kehl, of F. H. Noble & Co., has packed his "*grip*" (*family*, not samples this time), and left for a trip up the lakes. No more desirable way of spending a vacation could be imagined and friend Kehl is just the one to appreciate it. We hope he will have pleasant weather for his voyage on the Inland Seas.

The factory of F. H. Noble & Co. is working to its utmost capacity, and the number of customers coming and going from their city salesroom gives a good idea of the popularity of this firm.

The Excelsior Sign & Mfg. Co. are about settled in their new factory, and are now in position to fill all the orders they may be favored with.

Mr. C. J. Corey, the popular Western manager of the Pairpoint Mfg. Co , is out with a neat little circular, in which he quotes two mottoes worthy of adoption by many older concerns. They are these : "The top not too high," and "Goods well bought are half sold." Some of the novelties in cut glassware just introduced by this company are indeed elegant ; an especial novelty of this company is their new "Kirsch" dessert set. Mr. Corey has just returned from an eastern pleasure trip, having spent some weeks at Nantucket.

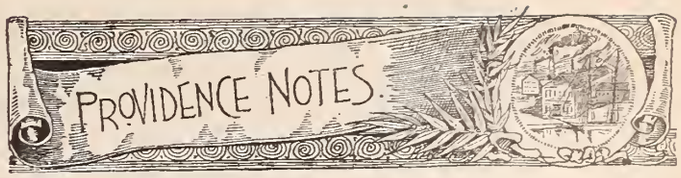
Having finished invoicing, the boys in the "Busiest House in America" are beginning to take their vacations. Robert Slade, of the watch department, has gone east for a couple of weeks in quest of pleasure.

Mr. Demarest, of Hodge & Demarest, western agents of the Hartford Silver Plate Co., is making preparations for an extended trip through the Northwest. Mr. Demarest is the popular secretary of the Jewelers' Council of the National Union.

One of the large signs over the store of F. Lewald & Co., Madison street fell the other day striking a passerby, breaking his leg and otherwise injuring him, as this is a crowded portion of the street it was very fortunate that more were not hurt.

Mr. Smith, of the Geneva Optical Co., has been ailing for some time but is about again doing a hard day's work as is his custom. The store of this firm is receiving a thorough overhauling and renovation. Galleries are being built around the store to give more space for stock. They are about to secure an additional floor as the increase in business demands more room.

Mr. Rooney of the Kenosha Watch Case Co., says the prospects are excellent for a good fall trade. Several firms have already placed orders for the new "Badger" case.



PROVIDENCE, R. I., July 21, 1890.

There are many Providence jewelers who look with varying degrees of apprehension upon the Silver bill as signed by the President, July 14. They have become impressed somehow with the possibility of a rise in the cost of gold—that is, when silver will have depreciated, so that gold may be purchased at a premium only.

The Sterling Co. report that business for the past year has been with them very satisfactory. Just now it is a trifle quiet.

J. Briggs & Sons have received their charter of incorporation from the Legislature, and they will henceforth be known as the J. Briggs & Sons Co. Mr. Briggs is at present spending his vacation at Edgartown.

W. E. White & Co. are turning out some novelties in rings and gold beads, which are proving very salable.

Hancock, Becker & Co., in their new quarters, at 54 Page street, are making things hum. In white stone goods and fancy rings they are well up in the van.

Messrs. Stephen C. Howard and C. C. Weintze of Howard & Son have been the last month or so on a combined business and pleasure trip through Europe. Both will be home by the first of August.

The Gorham Manufacturing Company, after months of gradual moving, have at last taken full possession of their immense Elmwood estate, and consequently shut down forever at their old works in the heart of the city. The change has been so gradual, that no perceptible difference has been caused by the transfer of the machinery, and now the company are "at home" in one of the finest plants in the world. On July 3, engines at the old works shut down, the walls were left bare and desolate. On the following Monday the new 7th Ward home was officially opened.

A. S. Southwick & Co. have started a manufacturing jewelry business at 21 Eddy street. They will make sterling silver and a general line of stock plate.

Fred. I. Marcy & Co.'s Acme and Eiffel buttons are meeting with large sales out West, so says Mr. Medbury, who has just returned from a business trip.

The firm of Thurber & Burns has been succeeded by A. B. Day and G. E. Burns under the name of A. B. Day & Co. Their special attention will be devoted to the making of stone rings and a line of solid gold rings.

Messrs. Hutchison & Huestis have added to their large factory another good sized room, which was much needed by reason of increased business. The firm has also rearranged its plant so that it is now one of the best ring factories in the city. A new private office apartment has been added, which is furnished very tastefully and finished in natural wood. A large safe has been fitted to the office, and with the other gives them two for finished work and work ready for finishing and stone-setting. Hutchison & Huestis report a good business with plenty of orders.

Hamilton & Hamilton, Jr.'s 14-karat filled seamless chain "King" is meeting with great success. The firm never were more busily engaged than at present.

Foster & Bailey, the well-known manufacturers of 60 Richmond street, have added to their line a large assortment of curb chain padlock bracelets, which are meeting with the usual success attending the productions of this pushing house.

OUR TRADE ORGANIZATIONS

THE JEWELERS' LEAGUE

AT THE monthly meeting of the Executive Committee of the League held on Friday. July 11th, there were present Vice-President Greason and Messrs. Howe, Jeannot, Jenks, Bardel and Sexton.

There were nine requests for change of beneficiary granted, three applications were rejected, two applications were referred for investigation and the following twenty-one applicants were admitted to membership: Edward D. Allin, New York City, recommended by W. H. Jenks and C. H. Armes; Englebert Biber, No. Attleboro, Mass., recommended by H. F. Liebel; Henry Binder Jr., Detroit, Mich., recommended by H. F. Baker and C. H. Morrison; Geo. E. Brundage, N. Y. City, recommended by J. B. Bowden; Ernest V. Clergue, N. Y. City, recommended by J. W. Senior; Clarkson Clothier, Phil. Pa., recommended by J. F. Simons; Louis E. Fay N.Y. City, recommended by G. H. Hodenpyl and F. N. Welch; August Goldsmith, N. Y. City, recommended by J. W. Senior; David Gunzburger, N. Y. City, recommended by E. Untermeyer, Norbett Gunzburger, N. Y. City, recommended by E. Untermeyer; Wm P. Manford, N. Y. City, recommended by L. Freund and J. M. Weis; Edward T. Hopkins, St. Louis Mo., recommended by F. E. Knight; August Loch, Allegheny, Pa., recommended by J. P. Steinman; Emil Morek, Chicago, Ill., recommended by J. J. Fogerty; Benjamin Marks, Pittsburgh, Pa., recommended by I. E. Isaacs; James A Moore, Phil. Pa., recommended by Samuel Kind; M. D. Quitman, N. Y. City, recommended by J. W. Senior; Frank H. Sadtler, No. Attleboro, Mass., recommended by C. A. Marsh and S. O. Bigney; Samuel F. Sipe, Pittsburgh, Pa., recommended by G. E. Goddard and C. Holyland; Wm H. Smock, N. Y. City, recommended by O. G. Fessendon and C. W. Bridgman; Jacob Solinger, N. Y. City, recommended by H. B. Thornbury.

THE JEWELERS' AND TRADESMEN'S COMPANY.

DURING the month of July the following have been admitted to membership by the executive committee: Austin M. Edwards, of Edwards & Lee, Buffalo, N. Y.; Alfred W. Henckell, M. D., Rochester, N. Y.; John H. Quigley, Troy, N. Y.; John Schleuther, of Schleuter Bros., Gustavus Schleuter, Yonkers, N. Y.; Edmund Scheuer, Toronto, Ont.; Charles E. Atwood, Montgomery, N. Y.; Robert Adolph, Brooklyn, N. Y.; Edwin R. Ellis. Raleigh, N. C.; and the following of New York City, Welcome B. Price, George Hageman, Black, Starr & Frost; Thomas B. Brown, Thos G. Brown & Sons; John A. Linherr, M. A. Linherr; Jeremiah Milleman, Courvoisier, Wilcox Mfg. Co.; John J. McCrane; Peter Madison, Walter Dougherty; William Stratford, M. D.

At the meeting of the executive committee, on July 16th, proofs of the death of Charles A. McLaughlin, of Jersey City, were presented, the first death since February last, and an assessment is now in course of collection to replenish the mortuary fund in anticipation of the next succeeding death. This is the fourth death since the founding of the company in 1887.

The following address to the members, which has been recently mailed to them, speaks for itself, and will doubtless occasion a spirited emulation among the members:

One of the enthusiastic members, prompted by the appeal of President Woglom in his address before the annual meeting in January last, "for the hearty co operation of our members in promoting the growth of our society," having placed in the hands of Treasurer Saxton, a sum of money amounting to $125, to be distributed upon such terms as the executive committee may suggest, the executive committee, therefore, offers $75 to the member, exclusive of the officers and superintendent, securing the number of members aggregating the largest amount of their combined certificates of membership; $25 to the member securing the second largest; $15 to the third, and $10 to the fourth. Applicants need not be restricted to the jewelry trade alone, as the recommendation by a member will be sufficient for the application to be considered. The competition will be closed on January 1, 1891, and the presentations made at the annual meeting in that month. The proper awards are to be determined by the executive commitiee.

NATIONAL RETAIL JEWELERS' ASSOCIATION.

ON July 12, a meeting of the National Retail Jewelers' Association was held in Haddon Hall, Atlantic City, N. J. Many of the members present were accompanied by their wives and daughters, and all appeared to thoroughly enjoy the occasion. The business meeting contemplated was not held, the attendance not justifying the transactions of business of importance.

The jewelers present were mainly from Philadelphia, where the headquarters of the Association are, they were as follows: Frederick Schober, I. O. Stillman, Thomas Hertzberg, Byron Hertzberg, Daniel Merz, Eugene Merz, Frank Snow, A. S. Goodman, John A. Lehman, Robert Pinkerton, S L. Schoen, William M. Ettinger, Geo. S. Kirtz, William Haines, Robert W. King, Frederick C. Lingg, James G. Morris, Simon C. Levey, Charles B. Lynch, Thomas H. Carroll, John R. Harmer, Morris M. Borden, George Hoffman, William H. Dotter, Frederick Street, L. H. Becker, W. H. Bannard, J. W. Smith, Edward H. Rhodes, Joseph M. Parker, Jr. John B. Hodgson, Jr., F. C. Bode, Jr., Henry Harper and Oscar Graeser.

THE JEWELERS' SECURITY ALLIANCE.

The regular monthly meeting of the Executive Committee of the Security Alliance was held at the Alliance Office on Friday, July 11. There were present: David C. Dodd, Jr., Pres.; Henry Hayes, Vice-Pres.; J. B Bowden, Chairman; Chas. G. Lewis, Treas., and Messrs. Stuart, Kroeber and Geo. H. Hodenpyl, Sec'y.

The following were admitted to membership: Andrew P. Nahmens, New York City; J. Frank Beers, Newark, N. J.; John E. Parker, Morristown, N. J.; T. H. Bowen & Co., Bridgeton, N. J.; Marsh & Hoffman, Albany, N. Y.; Hollinshed Bros., Philadelphia, Pa.; Camerden & Forster, Saratoga Springs, N. Y.

NOTES.

The July meeting of the Missouri Retail Jewelers' Association was held on Sunday, July 6, in the hall at the corner of Franklin avenue and Eighth street, St. Louis, Mo. The subject of watch clubs engaged a good deal of attention, and it was decided to fight against them vigorously.

Roder, Bohm & Co., New Orleans, La., were admitted last month to membership in the National Association of Jobbers' in American watches.

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Mechanical Ocular Defects.

Their Nature, Cause, Correction and Relations to Functional Nervous Diseases.

Edited by C. A. Bucklin, A. M., M. D., New York.

[The aim of the author is to produce a clear and thoroughly practical course of instruction on the subject of "mechanical ocular defects," which is entirely void of useless technicalities and within the easy comprehension of every thinking student without his having had any previous technical or mathematical education.]

WE WILL continue the further consideration of hyperopia. The number of ocular symptoms which can arise from the simple cause of a short diameter in the eye-ball will be found to be very numerous and diversified.

The greater number of all forms of asthenopia are due to this one cause. We learn to distinguish at first sight an ordinary case of asthenopia resulting from hyperopia as the following case will illustrate. Miss B , aged 18, has serious asthenopic symptoms. I place a book before her at six inches, and reading becomes difficult; at five inches it becomes impossible. There must be either hyperopia or diminished accommodation. As I look at the other members of the family I see a brother with convergent strabismus. As ninety per cent. at least of all persons having converging squint are hyperopic, and hyperopia if found in a family usually exists in several of its members, confirms me in the belief that the individual is hyperopic. She complains that she cannot persevere with her work. Upon using her eyes she has a disagreeable feeling above them; upon closing the eyes for a moment this disagreeable sensation passes off, but only for a short time. She states that at a distance she can see well. After a long rest she can continue her work better. She sees well through convex 14 at a distance. A weaker lens is no better and a stronger one is worse. She states that the trouble commenced after a fever. She has always had the hyperopia, and her accommodation which was weakened by the fever could no longer cover it. She was given convex fourteens to work with and cautioned not to try out her eyes very severely at first, and avoid night work for a time till she recovered her power of accommodation. She was entirely free from all trouble in a week.

The question now arises, should this young woman wear these glasses continually or how much should she wear them. There are many sides to this question which the sufferer cannot, without some instruction, settle for herself.

Some people work to the limit of their power of accommodation, covering their hyperopia during distant vision. The ciliary muscle is therefore constantly in a state of fatigue, and they will tire at the reading distance although they wear their glasses. This class of persons require assistance for distant vision in order that they may not become too fatigued for practical near vision. Other persons do not become fatigued in overcoming their hyperopia for distant vision, these people can use their glasses for reading only and can read without fatigue or annoyance. By careful questioning, the optician can usually come to a conclusion whether the patient will find it beneficial to use his glasses constantly or not. Those who tire during the distant visual act will always be too fatigued to do near work comfortably, although they have proper near glasses.

The above described cases fairly illustrate what I have designated as border cases of hyperopia.

Asthenopia resulting from hyperopia is frequently the cause of despondency and melancholia, as the following case illustrates. Mr. B., aged 50, complains that he is gradually growing blind; he has noticed that his sight for the last twenty years has been leaving him much faster than is usual with other persons of his age. He has felt for years that each successive year would be the last that his eyes could hold out. He can remember that as a child he read with difficulty frequently, lost his place on the line he was reading, and was considered a bad reader. While a student his eyes annoyed him greatly, and he was obliged to learn more from hearing than by study. He always lived in fear that any work he did with his eyes would hasten his blindness. This prevented him from concentrating his mind on any definite object. The fear of blindness had also prevented his forming a matrimonial alliance upon which he believed his happiness for life depended. He had consulted an optician in whom he had faith, and who on the ground of common sense had given him convex lenses, which in some degree relieved his trouble, but they had been taken away from him by the first oculist consulted as dangerous because of their great strength. Upon actual test this man could see distinctly at a distance through $+\frac{1}{7}$.

The above illustrates a class of cases which every one must in time meet.

A paralysis of accommodation may make an amount of hyperopia annoying, which otherwise would not have been troublesome as the following case illustrates. In the ten-year-old son of a physician, the father observes has enlarged pupils and he is not able to read even in the morning. Paralysis of accommodation was rejected as a possible cause, because the boy could not see at a distance. Some lurking affection of the optic nerves or brain was suspected. The pupils would not show the slightest reaction to light. The supposition that the boy has paralysis of the accommodation is supported, but the reason why he does not see at a distance is not explained till it was demonstrated that convex twelve gave him distinct distant vision, while convex six enabled him to read. Upon the ground of the above facts, all suspicions regarding a diseased condition of the optic nerve or retina can be dismissed.

It is sometimes very difficult to distinguish between the asthenopia arising from hyperopia and that arising from paresis of accommodation in young persons. A boy of fourteen complains that for some time he has not been able to read. His general health is poor, he looks pale and sickly. The pupils move well. He feels weak, not having recovered his strength after an attack of sore throat, which was evidently diphtheria. Acuteness of distant vision is good. Neither convex or concave glasses are accepted. His near point of distinct vision is at nine inches; it should be at three inches. He can only see at nine inches for a few minutes, and this can only be done by a spasmodic effort. From ordinary asthenopia resulting from hyperopia the condition is distinguished by its rapid appearance about two weeks after an attack of diphtheria. The easy distant vision. The difficult near vision and the absolute rejection of convex lenses during distant vision.

Muscular asthenopia is frequently associated with hyperopia. This class of cases are very troublesome. Having corrected the hyperopia, they still complain of asthenopia. Setting the lenses close with a very small distance between the optical centres will sometimes relieve the difficulty. Again we are obliged to resort to prisms with the bases in, joined to convex lenses, for the purpose of assisting weak internal muscles. Tenotomy of an external rectus is also a method of obviating difficulties of this kind. It should be remembered that persons afflicted with absolute hyperopia are usually considered near-sighted. Children thus afflicted will always select the brightest possible light, a fact alone which should make one suspicious that they are not near-sighted. The supposed myopia of this class of persons usually require very strong *convex* lenses. In our next we will take up the consideration of convergent strabismus as a symptom of relative hyperopia.

CORRESPONDENCE.

Bradford, Pa., July 9, 1890.

Dr C. A. Bucklin.

I have a customer who has a peculiar trouble with the eyes; what is called conical cornea, which comes to a point in the center of the cornea. It is clear, and you would not notice it unless you examined the eye; can see out each side of

the eye, but cannot look straight ahead and see. What can be done, and is there any lense that will help vision? Awaiting an early reply, I remain,

W. T. LANE.

This letter leads us to the consideration of a very troublesome disease, conical cornea. The middle fibers of the cornea atrophy and this allows the cornea without any perceptible inflammatory changes to bulge forward in the shape of a cone. The apex of the cone may be central or it may be eccentric. When the condition is advanced the peculiar light reflex from a conical cornea is so large and bright that it cannot fail to attract the attention of the most careless observer. At an earlier stage the trouble may escape the notice of a very careful observer if examined by simple inspection. The refractive disturbances are very great at all stages of this deformity. With a dilated pupil the retinal reflex obtained with an ophthalmoscopic mirrior will show this deformity clearly in its most incipient stages. It also shows plainly the exact position of the apex of the cone. The cone will appear as a dark shadow on the red retinal reflex. When central, the ring of red will appear equally all about the dark shadow. When the apex of the cone is eccentric it will be seen at a glance. It is also possible that the apex of the cone has a certain area of regular spherical surface under which circumstances the central point will appear bright red, surrounded by a dark shadow.

If by any optical device practical vision can be obtained, this means is to be chosen. If not careful experiments must be instituted with enlarged pupils and reduced pupils, combined with lenses and all forms of stenopaic apparatus are to be tried for the purpose of determining how much vision can be gained by permanently changing the position of the pupil by an irideetomy. If all these experiments fail to procure vision which is of any use to the patient, then it is legitimate to operate directly on the cornea for the purpose of making it less conical.

The selection of glasses in this class of cases depends on the condition of the apex of the cone. When this is clear the person will see better with very small pupils. The refractive error will be a high degree of myopia or myopic astigmatism, or a combination of the two defects. When the apex of the cone is not clear the person will see better with enlarged pupils as he is obliged to see over or under the opacities.

In the first class of cases bi-nocular is not practical. The following three cases will illustrate practically these conditions as they occur:

Case 1—Stenographer 22 years of age, conical cornea both eyes. Apex of cone in both eyes opaque. This patient has practical vision by using two plane lenses with a thick stripe of black varnish drawn over each lens one-fourth of an inch wide in a horizontal direction. The coating of varnish should be very dense. This excludes a certain amount of light from the eyes, and makes it easy to retain a slightly dilated pupil. When the individual works he looks down through the clear part of the cornea below the apex, and when he looks at a distance he looks through the clear part of the cornea above the opaque apex. The black varnish also excludes the annoying light which would come through the opaque apex. With these glasses the person had practical vision, and could follow his profession, without them he could do nothing. The case is unique and there is no similar one on record.

Case 2—Apexes are clear. Find man following his vocation as engineer in large factory with following glasses: Right eye — $\frac{1}{5}$, cylinder axis 180°. Left eye — $\frac{1}{5}$, cylinder axis 90°. With these lenses on he could follow his calling, without them he could do nothing. His fear of losing or breaking them was distressing, as they were the only glasses that he had found through which he could do his work, and he had found them by accident. If anything was held before the left eye, which obstructed the light, the *right* eye which was the only one with which he could see would fail him. When both cylinders were placed at 180° his vision failed him.

This man had a clear apex to the cone of his cornea in which myopic astigmatism of $\frac{1}{5}$ existed, with a small pupil he could see with this eye, provided the confused vision of the other eye could be excluded without enlarging the pupil of the seeing eye.

Even a ground glass placed in the trial frame before the non-seeing eye made vision poor, while — $\frac{1}{5}$, axis 90° cylinder before the eye which could not see enabled him to see with the other eye. This lens simply made the vision so bad in one eye that he could see nothing, but it did make the pupil of the seeing eye enlarge by cutting the light down. It could be clearly demonstrated that the right eye was the only seeing eye by placing a card in the line of vision of each eye at some distance from the eye.

Case 3.—There are many cases of conical cornea in which I cannot improve the vision. These cases will all in time attempt, by operative means, to have the form of the cornea changed.

SCHOOL OF OPTICS.

The last class in optics finished July 7th. The members were as follows: Tobias Bartlet, Reading, Pa.; Herman C. Kachlein, Lafayette, Ind.; Max Herman Wolff, New York; Walter C. Rix, Ilion, N. Y.; Robert Wedekind, Louisville, Ky.; Samuel Brann, New York; Chas. W. White, Buffalo, N. Y.; C. Landernow Pullar, Prattsburgh, N. Y.; John B. Fairburn, Theresa, N. Y.

A class will form September 10th. Those wishing to join will assist me greatly in forming the class by applying very early.

How to Prepare Crocus.

AS COMMERCIAL crocus does not at all times possess the properties necessary for polishing the different metals, it is advisable, for the consumers to manufacture it himself. The manipulations to effect this are easy. Take pure and the clearest obtainable sulphate of iron, (iron vitriol, green vitriol, copperas), heat it in an iron pan up to fusion, and permit it to remain over the fire, while constantly stirring it with an iron spatula, until it is thoroughly dry, and drops into a pale yellow powder. This is then trituated in a mortar and sifted, placed in a new crucible, and left in the fire of a smelting furnace or calcined, until no more vapors are evolved. After cooling, the powder appears as a handsome red material, which represents the crocus used by gold and silversmiths.

The crocus is found in several color gradations, from pale red to brown red, blue and violet. The cause of the diversity of its colors is due to the different degrees of heat employed in its manufacture; the darkness of the color increases with the degree of heat, and its hardness also increases, for which reason a pale red (rouge) is used for gold and silver, while violet known under the name of "steel red," is employed for polishing steel. Each one of the different kinds of crocus, in order to obtain a favorable result, must be ground as fine as possibe, and then washed with water. Three clean glasses are used for the purpose, one of which is filled with water, and a quantity of the crocus is well stirred in with a wooden stick, and left to stand for about one-half minute; the fluid is then carefully decanted from the sediment gathered in the glass into the second; after it has stood in this for about two minutes, the fluid is again poured into the third glass, and left in it for several hours, to permit the complete settling of the powder. The sediment of the first glass is useless; that of the second is a crocus of an inferior quality, while that of the third is a crocus of the best grade. It simply requires to dry slowly to be fit for use. It is also advisable to moisten the dried powder with alcohol, and in some iron vessel to ignite it, whereby the last traces of fat contained in it are destroyed.

PARIS GOSSIP.

[From Our Special Correspondent.]

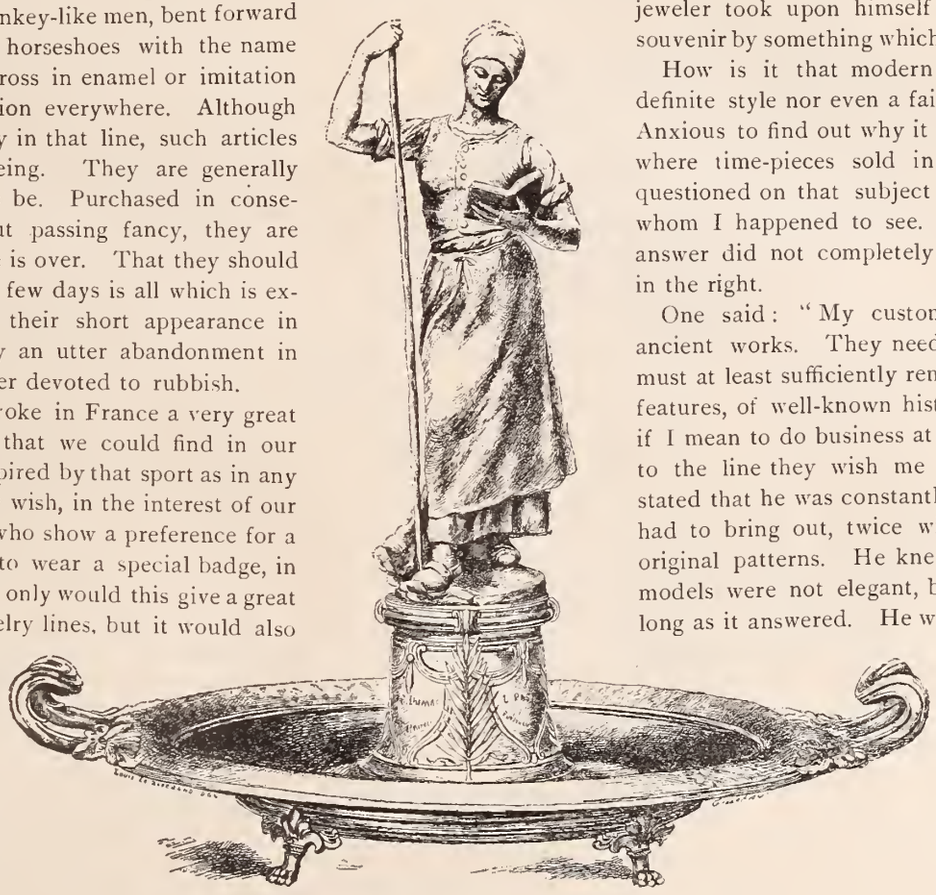
POPULARITY OF SPORTING JEWELRY—NEW STYLES IN MOURNING JEWELRY—A CRITIC'S VIEW ON MODERN CLOCKS—LACK OF VARIETY AND FRESHNESS OF DESIGN—THE SCULPTOR'S HAND IS NEEDED.

Paris, France, July 12, 1890.

Every year, during the feverish week of the Grand-Prix, sporting jewelry seems to replace almost entirely all other kinds in the show windows of some Parisian retailers. The various pieces of these displays look like tiny toys, and, no doubt, they are, if we consider them from a certain point of view. Jockeys' caps, with crossed whips; race horses with head and legs stretched in a desperate flight, hard ridden by monkey-like men, bent forward and rounding their backs; horseshoes with the name of the favorite flashing across in enamel or imitation stones, etc, call the attention everywhere. Although there never is much novelty in that line, such articles sell well for the time being. They are generally cheap, and they ought to be. Purchased in consequence of a periodical but passing fancy, they are seldom worn after the race is over. That they should look fresh and nice for a few days is all which is expected from them, since their short appearance in public is to be followed by an utter abandonment in the back corner of a drawer devoted to rubbish.

Boat races do not provoke in France a very great excitement, yet I believe that we could find in our shops as many trinkets inspired by that sport as in any other country. I sincerely wish, in the interest of our trade, that all the people who show a preference for a special sport felt obliged to wear a special badge, in the shape of a jewel. Not only would this give a great impetus to business in jewelry lines, but it would also allow manufacturers and retailers to know beforehand, to a very great extent, how much of this or that is likely to sell. If, for instance, the innumerable anglers who stand along the Seine or the Marne were all to consent to grace their uninteresting appearance with a touch of glitter, they would not only strike a better effect on those banks, where they spend (hopelessly enough), many silent hours, but they would besides do something worthy of praise in encouraging our trade.

Mourning jewelry is by no means a languishing branch of business in this country. Although we ought not to associate the idea of sorrow for departed ones with that of elegance and luxury, yet our own interest compels us to provide for wants which may arise from that anomaly. Besides, it might be urged that a lady, who is accustomed to wear jewels, looks upon them as an indispensable item of her wearing apparel, and consequently would no more think of giving up having them than she would consent to be seen out with no bonnet on. When going into mourning, she puts momentarily aside her glittering articles of adornment and wears jewelry well in keeping with the severe appearance of her dress. She may or she may not wish to look attractive in this neat but unpretending attire, this is really no question for us to examine.



FRUIT DISH BY DELAPLANCHE.

Yet it is now very far from being the only substance employed in mourning jewelry, and crosses, trefoils and stars are no more the only patterns to be seen in that line. Very fine niello ornaments of a sombre and serious character appear on brooches, ear-rings and bracelets. In layings of pale gold on a black enameled back-ground give also a befitting effect, reminding us of Zuloaga's damascened works. Locks of hair are also twisted and arranged in many different ways. Several rows of close cable-work, with a few pearls placed here and there look well in that line, either turned into necklaces, with pendants of same style, or forming bracelets with two acorns hanging from a cord.

People ought not entrust to a jeweler whom they know not with the arranging of their relics. Very strange things occur sometimes in that branch of business. I know, for a fact, that a short time ago a very dark gentleman from Hayti gave to a Parisian jeweler a curl of glossy hair to be placed in a locket, and it unfortunately happened that the valuable curl, being carelessly left on a table, was swept off by a servant, who ought to have known better. Well, the jeweler took upon himself to replace the worshipped souvenir by something which looked to an extent like it.

How is it that modern clocks exhibit neither a definite style nor even a faint tendency towards one? Anxious to find out why it is so, I visited most places where time-pieces sold in France came from, and questioned on that subject all special manufacturers whom I happened to see. I must confess that their answer did not completely convince me that they are in the right.

One said: "My customers only want copies of ancient works. They need not be faithful ones, but must at least sufficiently remind them, as to their chief features, of well-known historical clocks. Therefore, if I mean to do business at all, I must confine myself to the line they wish me to follow." Another one stated that he was constantly asked for novelties, and had to bring out, twice within the year, a series of original patterns. He knew very well that all these models were not elegant, but that did not matter, as long as it answered. He was not appointed to correct and develop the public taste, but simply to gratify it such as it was, and make money by it. A third one, a cabinet-maker, showed me clocks which he makes to match furniture he sells, and as I urged that it did not seem sufficiently to accompany, in point of style, the other pieces of the set it belonged to, he told me that no customer had ever made such a remark. If it happened, he would see what he had better do. In another place, I saw a large quantity of marble clock-cases very plainly cut, and learned that they were sold to retailers who bought the movements elsewhere; and also bought various bronze or gilt zinc statuettes and groups to stand on the clocks. I could not conceal my surprise at seeing those heavy blocks of marble so perfectly common place in their outlines. "These are the only shapes that sell," was the answer.

Now, it would be unjust to deny that some places have pretty time-pieces, very graceful in their outlines and beautifully finished off. But it is evident that, generally speaking, our clock makers do not take enough trouble to create elegant patterns. Designers of taste, having good notions of architecture, could easily devise remarkable models of clocks, which, although they might not be strikingly original, would at least give a pleasant and satisfactory

effect, without costing any more than those we see everywhere in middle class shops.

Our new school of sculptors who have deliberately abandoned mythological tracks to plod into the furrows of French country fields, as the great painter François Millet did before them, have obtained, with very simple and limited means, the most remarkable results. Thanks to them, silversmiths, who make to order prize cups for agricultural competitions, have been enabled to provide for the winners most suitable works, exhibiting familiar country figures and scenes, instead of allegorical groups but remotely connected with rural life.

Our Fig. 1 reproduces a kind of fruit dish with a statuette of a peasant girl standing in the center. This unassuming female, who employs a moment of rest in earnestly reading a serious book, personifies both Agriculture and Science. The costume, the attitude and the expression of the face, all unite to impress the looker on with an exact idea of the object the artist had in view. A sculptor of the old school would have shown us a blonde Ceres, all radiant



FRUIT DISH BY COUTAN.

with beauty and grace, holding out with a smile her right hand to a dignified Minerva, the two goddesses being accompanied with their well-known emblems. Although his country girl is far from having a taking look, I think that Delaplanche, who could easily have shown us a pretty female, was right to choose, on this occasion, a rustic model.

It is unnecessary to describe our Fig. 2. That wiry farming girl feeding fowls is really graceful in her plain garments, and the whole scene is true to nature. The various reliefs of the work are well calculated to give a sufficient prospect, and all the details are interesting. Coutan must have felt no hesitation in signing it.

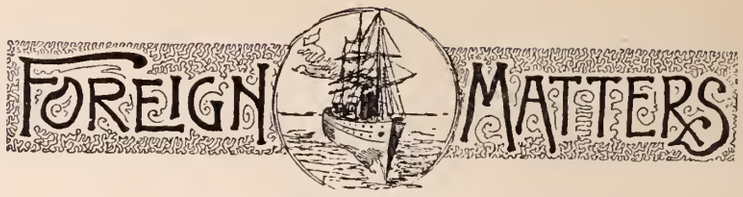
JASEUR.

IN VAIN.

[*Journal of Education.*]

SMITH—You have been pretty successful in gold mining, haven't you, Brown?

BROWN—Yes, and yet most of my searching for gold has been in vein.



[FROM OUR SPECIAL CORRESPONDENT.]

THE CRAZE FOR NOVELTY KEEPS LONDON JEWELERS BUSY—DEMAND FOR BETTER QUALITY—THE JEWELER HAS AN ALLY IN HYMEN—DIAMONDS IN EVEN GREATER VOGUE—THE WHITBY JET ASSOCIATION—THE POSITION OF THE MIDDLEMAN IN ENGLAND.

LONDON, July 9th, 1890.

With the turn of the quarter there seems to be a little better prospect for trade generally, and although in some branches of the jewelry and kindred trades, the turnover is somewhat less the profit is smaller than it has been, there is the satisfaction of a steadier market. There are none of those unhealthy fluctuations with which we are all too familiar. Our jewelry trade if not positively brisk, have enough vitality in them to leave no room for the complaint that the trade is dull.

The most encouraging feature at the present time is the extent to which manufacturers are producing new designs. I have before made reference to the necessity for this, and as one interested in the prosperity of our trades, I am glad to see this necessity has been recognized in the right quarter. Manufacturers are gauging the wants of the consumer better than I have ever known them to, and to this I attribute the more contented feeling that exists amongst our various manufacturers. There is far less complaining than there used to be, even when a lull in the demand for goods does take place.

Another encouraging feature about our present trade is that better goods are most in demand. Of course this has the effect of reducing the quality of the output, though the amount turned over is increased rather than diminished. As consumers get to prefer better specimens of the jeweler's work, so will the prospects of the trade improve. There is now less cheap Birmingham jewelry seen in our London shop windows than ever there was. Birmingham goods are there in abundance, but they are of the better class. The term Birmingham jewelry has become a special one, used to indicate the very cheapest productions. Indeed the solitary vulgarised word "Brummagem" is applied to any production that is merely an inferior imitation.

Judging from the samples that are now submitted to our London merchants and factors by Birmingham manufacturers, this word is likely to lose altogether its rather uncomplimentary application. The public are finding out that the lowest priced goods are not necessarily the cheapest. Indeed in bracelets, brooches, studs and solitaries, the consensus of opinion would seem to be that the lowest priced goods are necessarily the dearest. In studs especially—particularly gold ones—there has been an absence of solidity, indeed to those in the trade it has been felt that deterioration could not go much further, and so the very reactionary taste has appeared. I am rather surprised that this improved taste, as well as improved strength of the goods supplied, has not been earlier taught by our retailers. It will ultimately be to their interest to sell a higher glass of goods, if they sell less of them. But my own opinion has long been, that when the standard character of jewelry worn is raised, and can be relied upon, many persons will wear it who now eschew it altogether. In my

limited circle I know some ladies and some gentlemen also who will not wear any jewelry to be seen, because there are so many and such good imitations worn.

It is noticeable that much more jewelry is being worn just now, and the present fashion of wearing jewelry at weddings will still further increase the demand for it. Some recent brides—of course amongst those whose weddings are chronicled—have attemped elaborate decorations of jewelry, and expensive ornaments, especially those set with diamonds, are in great demand.

Diamonds do not get any cheaper; while the price of them has kept up, a great deal of inferior quality has been freely sold. This seems to be altering, and now expensive diamond ornaments are selling well, particularly pendants, necklets and bracelets. I have just seen, though under conditions that did not admit of a close inspection, a new shape in diamond tiaras; they quite encircle the head, and have a strong resemblance to a crown. These were very imposing and not at all likely to suit quiet taste. But as the habit of wearing diamonds becomes fashionable, we are sure to meet with settings of them to suit all tastes. As a novel application of the diamond for ornamental purpose, I may mention the wearing of small diamond studs in each corner of the present style of ladies' jacket. These are very attractive and the extension of this fashion should be a good thing for the trade.

Ladies have been wearing natural flowers rather extensively lately. This has given the incentive to the production of some very pretty enamel painted work in close imitation of flowers and leaves arranged in sprays. Our gilt jewelry manufacturers are making these in natural colors, and it is not unlikely that a large trade may be done in them.

An effort is being made to revive the Whitby Jet Industry, and an association has been formed for improving the trade. I do not see much reason to hope for great results from the association. I sometimes have a word or two with my wife about tastes and fashions when they refer to articles of ladies wear. I have spoken to her about jet ornaments, without saying why I made the allusion to them. I simply asked if jet could be made fashionable. She at once said, "Certainly; if you can induce the Princess of Wales, or Sarah Bernhardt, or the Duchess of Fife, or Ellen Terry to wear no other ornament for a time."

It may not be flattering to our fashionable ladies, but I am sure my wife is right. If ever jet is fashionable it will be so in servile following of some recognized leader of fashion, and not because of any beauty or merit of its own.

Our traders have been lately perturbed by some little discussion about the position of the middleman or wholesale dealer. We call him the factor, you describe him as the jobber. The question in the trade is whether he is a necessity or an incubus. I have my own idea about middlemen generally, but I fear you will not give me space in a letter to explain it. My theory briefly is that the closer you bring the producer to the consumer, the better will it be for the consumer and for the producer. There is, however, much to be said in justification of the factor or jobber in the jewelry trade; he seems indeed to be a necessity.

VIGILANT.

A NEW INDUSTRY AT KIMBERLEY.—What the Chinaman does on the Australian gold fields the unemployed in the Kimberley district have now found themselves in a position to do. The heaps of debris or "tailings" which have accumulated in the neighborhood of the diamond mines have been taken in hand, and a good business is being done in cradling and washing out the diamonds which have been left behind. It is said that many of the people engaged upon this work are making from £10 to £15 a week, and the industry will, doubtless, be kept up, seeing the Kimberley corporation authorities are doing everything they can to foster and assist it.

Obituary.

WILLIAM L. GILBERT.

The town of Winsted, Conn., mourns the loss of William L. Gilbert, the venerable and philanthropic capitalist and clock manufacturer, whose death occurred on June 29. at the advanced age of eighty-three years. Though seldom seen among the trade, his name is familiar, by reason of the millions of clocks turned out from the works at Winsted to every dealer in the country.

Mr. Gilbert was born in Litchfield, Conn., in 1806. His father was a farmer, and young William worked on the farm until he reached his twenty-second year. He also taught a district school. He afterward learned the trade of making wooden clock-wheels at Bristol, and in 1828 formed a partnership with George Marsh, his brother in-law, to manufacture such material in the same town. His contribution to the capital was $300, which he had borrowed. The firm was successful, mainly through the industry, economy and close application to business on the part of Mr. Gilbert. In 1841, Mr. Gilbert moved to Winsted, the town upon which he has in later years conferred so many benefits, purchased the old clock factory of Riley Whiting, and forming a partnership with Lucius Clark and Ezra Baldwin, commenced to manufacture clocks on a large scale. At the end of four years Mr. Gilbert bought out his partners' interest, and in 1851 Isaac B. Woodruff was admitted to partnership and has continued a member of the concern until the present time, being at this writing president of the company.



WILLIAM L. GILBERT.

In 1866 the Gilbert Manufacturing Co. was organized. This was a combination of the original clock making firm. The business had assumed large proportions and continued steadily to increase, until 1871 when the factory buildings were destroyed by fire. Mr. Gilbert then procured a special charter under the name of the Wm. L. Gilbert Clock Co., and the factories were rebuilt on a large scale well adapted to their purpose, and were furnished with the most perfect machinery for the manufacture of clocks. These works to-day are among the largest and best equipped of their kind in Connecticut, the State of clock making. Mr. Gilbert was president of this company, which continued steadily to prosper even through the financial revulsions that wrecked so many firms. He twice visited Europe, and was among the first to open up a foreign market for American clocks.

Though his connection with clock making formed the basis of the fortune he accumulated, Mr. Gilbert was identified with numerous other enterprises, most of which have been successful. He was a man of rare business tact, ability and energy. With a robust constitution and good habits, Mr. Gilbert combined an indomitable will, unwearying industry, strict integrity and strong common sense. He was president of the Hurlbut National Bank of Winsted, a partner in the firm of Gilbert & Gay, who have engaged largely in Western Loans and been notably successful, president of the Connecticut Western R. R., the building of which was largely due to his energy and capital, and was interested in several other corpora-

tions. Few business enterprises have been started in Winsted in which he did not invest, and the hillsides of the town are everywhere dotted with workingmen's homes which were built by him, or for which he furnished the needed money.

Mr. Gilbert was a very public spirited man. He was twice elected to the State Legislature. He was opposed to liquor and tobacco, belonged to no church and was opposed to secret societies. But what has endeared him to the memories of his fellow townsmen and what will perpetuate his name, are the numerous philanthrophical enterprises and charities which he founded and benefited. By his will he endowed with $400,000 the Home for Friendless Children in Winsted, a fine brick and granite structure with fifteen acres of land, gave $500,000 for maintaining a public high school at Winsted, $10,000 for the Gilbert School for Colored Children in Winsted, La., and $50,000 to connect Winsted with Long Lake, near that town, to vastly improve Winsted's water-power. His yearly donations at Thanksgiving and Christmas to the worthy poor of Winsted were very large. It is estimated that in addition to the large benefactions of his will he gave away during his life over three quarters of a million dollars. At a recent meeting of the Chicago Jewelers' Association appropriate resolutions were adopted on the death of Mr. Gilbert.

JAMES W. QUEEN.

James W. Queen, founder of the widely-known optical house of James W. Queen & Co., Philadelphia, died on July 12th at Cresson Springs, Pa., at the advanced age of seventy-seven years. He had been failing for some time, and visited Cresson in the hope of receiving benefit from the mountain air. He was buried from his late residence, 1204 Spruce street, Philadelphia.

Mr. Queen was born in Philadelphia, and received the ordinary education of the day. As a boy, he entered the employment of John McAllister, then the leading optician in the country, who had his establishment on Chestnut street, above Second street. He afterward, at the retirement of Mr. McAllister, formed a partnership with W. T. McAllister and Walter B. Dick, under the name of McAllister & Co., and continued the business. In 1853 this firm was dissolved, and Mr. Queen started out for himself at 924 Chestnut street. In 1855, Samuel L. Fox, who had also been with McAllister, was taken into partnership, and together they succeeded in building up the enormous business now bearing Mr. Queen's name. In 1868 Mr. Queen sold out his interest to Mr. Fox and retired from business He traveled extensively, visiting all civilized countries. Until last year he enjoyed excellent health.

In person, Mr. Queen was genial and magnetic. He enjoyed the friendship of a large circle of acquaintances. In the business history of Philadelphia his name occupies a prominent place. His reputation was of the highest and he was noted for his integrity. Mr. Queen was very successful as a manufacturer of delicate instruments for scientists, surveyors and chemists, and his reputation in that line was world wide.

The house established by Mr. Queen has been one of the most successful optical establishments in the United States. The scientific instruments manufactured by it have a high reputation throughout the world. The present members of the firm are Samuel L. Fox, who has been the leading spirit in the business for the past twenty years, and his son, Edward B. Fox.

SOLOMON BAUMAN.

The trade, last month, was grieved by the death of Solomon Bauman, secretary of the L. Bauman Jewelry Co. of St. Louis, which occurred at Elkhart Lake, Wis., on July 6. Mr. Bauman had a week previous left St. Louis with three of his children on a pleasure trip. He was then in apparent good health. A few days later he was taken ill, and becoming rapidly worse a Milwaukee physician was telegraphed for. The doctor pronounced the disease abscess of the liver and decided that an operation was necessary. The operation was performed Sunday afternoon, but Mr. Bauman never rallied from the effects and at 5 o'clock breathed his last.

Mr. Bauman, who was familiarly known as "Sol," was born on March 6, 1843. He had been prominently engaged in the jewelry business most of his life, and was known and esteemed by thousands of jewelers throughout the country. At the incorporation of the L. Bauman Jewelry Co., about seven years ago, he was elected secretary, which position he held till his decease. His death has caused considerable regret among the business life of St. Louis, as he was always appreciated as an energetic, honest and conscientious man, alive to the interests of the city. The deceased leaves a wife and four children.

JOSIAH D. RICHARDS

The Hon. Josiah D. Richards, Postmaster of North Attleboro, Mass., was killed by the bursting of a shotgun while out shooting on July 11. Mr. Richards was a very wealthy man, having retired from the jewelry busisess about ten years ago. He was a life-long Democrat, and was for a number of years a leading member the State Democratic Committee. During the administration of President Pierce he was appointed postmaster and held the office until his removal by Lincoln. When Mr. Cleveland was elected he again applied for the office and received the appointment, which he held up to his death.

The Philadelphia's Clock.

THE clock which the people of Philadelphia have presented to the recently-built cruiser bearing the name of their city is said to be the handsomest piece of work of the kind in America. The design of the clock embodies the several features of the coat-of-arms of the municipality. The dial, which is the work of Durand & Co., of Newark, N. J., is of silver surmounted by a golden eagle with outspread wings. On the right is a full length figure of a woman in classic garb, holding a roll of parchment. To the left stands a similar figure bearing the horn of plenty. Below the face of the clock is a shield, on which is engraved the hull of a ship, surmounted by crossed guns and encircled by a laurel wreath A cable forms a frame about the clock case, and in loops at each of the upper corners there is a fouled anchor. Two draped American standards are in graceful relief around the dial, and beneath the "choppy" sea at the feet of the female figures are two scrolls, one bearing the words "Philadelphia Maneto," and the other, "U. S. S. Philadelphia." The dial is the crowning beauty of the clock. The minutes are divided by raised golden pegs, while the center of the face bears the shield of the city's arms, with the plow and the ship in clear relief. Above it and also in relief, is the arm of Justice, with the suspended balance. The hands are rich golden scrolls. The eagle and the female figures were modeled from life, and the ship is a copy of the old frigate Constitution. The ordnance is of the new high-power type, designs having been furnished by the Navy Department.

The movement of the clock which is the production of E. Howard Watch & Clock Co., is constructed with a balance wheel on the principle of a watch, consequently the pitching and tossing of the sea will not affect its movement. The escapement is a demi-chronometer, jeweled magnificently. Instead of striking the hours, the chime of bells with which the clock is provided strikes the ship's bells in couplets, in true nautical style. The bronze frame of this magnificent timepiece is the work of a Philadelphia house.



NEWS FROM THE CAPE.—A HORN OF PLENTY RUNNING OVER WITH GOLD AND DIAMONDS.

[From our Special Correspondent.

Pretoria, South Africa. June 1.

The predictions of the optimists regarding the Transvaal Gold Fields have not been fulfilled, and we seem far from the output of 100,000 ozs. per month expected. At present a depression exists at Johannesburg, the principal mining centre, and prospects for speculators and holders of scrip are somewhat blue. Lack of the necessary capital and bad management are the main causes of the present temporary reaction. The present condition of these gold fields is very similar to several epochs in the history of the diamond fields when the crazes of company flotation swept over the land like an evil whirlwind, leaving desolation in its track. In these periods of depression, all hope in the South African diamond mines passed away, and gloomy forebodings as to the future of the country prevailed. But these very diamond mines have proved themselves the richest the world has ever known, and their output is so enormous as to require the ablest management under a magnificent corporate system which has been constructed to regulate supply and demand, so that on the one hand the market shall not be glutted, and on the other that shareholders shall have handsome dividends Under this system the diamond mining of South Africa has been lifted from the unhealthy and feverish atmosphere of speculation into the purer one of a safe and settled industry. What the diamond mines of South Africa have been to other diamond mines in other countries, there is every reason to believe the gold mines of South Africa will prove themselves to be. Notwithstanding the bad management which has generally existed, the annual output of gold is now at the rate of over one million and a half sterling, which is not a bad return for mines only about three years old, for it must be remembered that gold mines cannot be made in a day. More than this, the extent of the gold fields is so enormous that no monopoly will be able to come into existence, and there will be no need to regulate the output of gold, for the world will take without depreciation of the value of the precious metal all the gold which South Africa can produce. At any rate this must be for many years, for so many years indeed that we may place for the present that problem out of the pale of practical discussion, taking the extent of the Rand reefs as beyond doubt, for they have been proved at depths up to six hundred feet, and at these depths the reefs are known to become flatter, in substantiation of the theory that the gold area extends in a basin over the vast mileage between the Rand and the Orange Free State.

Looking to the progress actually made, it is seen that the actual figures show that in 1887 the total production of gold on these fields was only 34,897 ozs., while in the following year it had risen to 230,917 ozs. In 1889 the output was 379,733 ozs., and for the first four months of this year it has been 147,325 ozs., which shows a steady increase The total output of gold from the Witwatersrand up to date totals 793,872 ozs. All this is so much actual gain to the wealth of the world.

The annual meeting of the De Beers Consolidated Mines was recently held, and the speech of the Chairman almost reads like a fairy tale of inexhaustible wealth. Ten years ago Mr. Kitto, a well-known engineer, was regarded as very bold in saying that passing over the present generation, the future need not even bother itself about the permanency of the De Beers and Kimberly mines. As for the present generation of shareholders, there is not only for them the certainty of a dividend every year or half year, but of one which will not be liable to fluctuations, as by amalgamation of the several mines, giving the directors the power of closing one or other, should they deem fit to do so, control of the market has been practically obtained, and it will be possible to keep the price of diamonds at one steady figure. Of course any further great discovery would have an effect to some extent injurious, but it is now twenty years since these mines were discovered, and although a vast amount of prospecting has since been done, the result so far has been *nil*, or nearly so. From time to time we hear of new diamond discoveries, but they have proved so far mere flashes in the pan. Besides which, mining for diamonds as for gold has undergone a complete change of method, and can only be profitably engaged in by companies with a large command of capital. The position of this great company to-day is: Besides De Beers, they are in possession of the whole of the Kimberly mine, have a paramount interest in the Griqualand West Company (half of the Dutoitspan mine), and have a predominant interest in the Anglo-African Company; and having also a lease of the Bulfontein Consolidated, they have virtually the whole diamond properties of Griqualand in their hands. What the company has to get along at present, so to speak, is twelve million loads of blue "within sight," which are expected to yield sixteen million carats of diamonds, or twenty millions sterling, placing the price per carat here at twenty-five shillings. The demand for diamonds is reported to be still fully equal to the supply, despite the report of depression in Europe, and it is confidently stated that when the absolute control of every property has been acquired it will be possible to make the price of diamonds what the company pleases. But, however, for admirers of this luxury, it will be comforting to learn that there is no present intention of raising the price above thirty shillings; and if it can possibly be believed that a company could be so liberal to the public, and self-denying in the matter of its own interests, it is in contemplation to sell at the still lower figure of twenty-five shillings per carat Amongst other particulars that will be of interest, it may be stated that the water used by the Kimberley and De Beers' mines cost for the year £24,000. The profits of this company for the past year were £448,000, of which all but £85,000 was reaped from the De Beers' Consolidated, but the prospective profits as worked out by the chairman, amount to £2,663,000 per annum, the working expenses being estimated at a maximum of ten shillings per load. The net profit then would be sixty-six per cent., and it was on these calculations that the chairman (Hon. C. J. Rhodes) relied when he said some time ago that the shares would go up to £70. The rapidity with which this great scheme of amalgamation was carried out, is a remarkable testimony to the energy and financial abilities of Mr. Rhodes and his colleagues. It is only a little over two years since the De Beers' Consolidated was established. As soon as that was accomplished overtures were made to amalgamate with the De Beers Mining Company, and that scheme was carried out before the close of the first month. The next thing was to arrange for raising debentures amounting to two and a quarter millions, for the purpose of purchasing properties and liquidating debts. Then followed a purchase of Central shares, and in August, last year, it was resolved to amalgamate the two mines. At Kimberley and De Beers, together, the company has now at grass loads of the net value of £1,375,000.

The directors were in the happy position of being able to declare a dividend of ten per cent. at the close of the year. The demand for diamonds appears to be steadily on the increase, and the value of the output has risen from one and a half million in 1876 to an average of nearly four million carats for the past two years, without affecting the price. Whilst these mere interests that could be counted by scores and even hundreds, the price per carat still averaged twenty shillings or a trifle over. Since the amalgamation it has steadily risen, and the average the last three months was twenty-seven and six. The objections to great monopolies do not seem applicable in this case. They have not driven the diamond digger off the fields

for he has long been gone, and as for several of the small companies they were not paying their way, and when in difficulties, and of course compelled to put their diamonds on the market, were taken advantage of by buyers. The most influential of the directors are opposed to the diamond market crossing the water, and are of opinion that had it been removed the results would not have been as favorable. For one thing the local buyer will never be disposed to see the market go down, but the European buyer would often wait for a fall, as has frequently been the case to the grievious loss of individuals and companies who could not hold out against a ring. On the other hand the retention of the local market places the holder in the position of practically being able to make his own valuation. The diamond buyers are in Kimberley. They get the orders and go to the companies to buy, and have to pay the companies' prices in order to get their diamonds to ship. This is fairly satisfactory, and carries on the good old maxim of live and let live. The statement that it is not the intention of the company to ship brings relief to many here whose occupation would be gone if it were done, and to the dealers and traders with whom the buyer is a good customer. The whole capital of this company is a trifle under four million pounds, and the operations of Mr. Rhodes may well be called a marvellous piece of finance, when it is remembered that what he has succeeded in affecting is nothing less than getting the control of the whole mining industry.

Some Customs returns just published show that in 1889 there was an increase in value, but a falling off in weight as compared with 1888. The figures are 1888: 3,841,937 karats of a value, at 21s. per karat of £4,022,379. In 1889 the exports were 2,961,978 karats, of a value at 28s. 6d. per karat, of £4,325,135. This condition of things has, of course, been brought about by the amalgamation of the principal companies of the four diamond centres: Kimberley, De Beers, Bultfontein and Du Toits Pan. The amalgamation of the principal diamond mines, by which the gigantic company has been created, is from a De Beer's shareholder's point of view, no doubt very beneficial to them; but as far as the interests of the Cape Colony at large are concerned, restrictive output means less expenditure all round. The records show that there was last year a decreased export, although the value was more than in the previous year which, of course, means less employment of labor, and this in its turn will seriously affect the local trade at Kimberley. The less remunerative mines in Du Toit's Pan and Bultfontein, which are under the control of the monopoly company, have been shut down, through which trade in that locality is suffering, and landed property has become almost unsalable. A similar state of depression may be anticipated in Kimberley if the output is still to be further restricted.

CINCINNATI

[From our Special Correspondent.]

Cincinnati, July 21, 1890.

In the interviews your correspondent has had with the jewelry dealers generally they have expressed their entire satisfaction with the results of the trade the past season. Although it is the dull season with the retail trade, yet July has been comparatively satisfactory to them, rather above the usual July trade, and those whose year closes with July 1st, are highly pleased with the showing of the year's business. The manufacturers and wholesale dealers are quite active preparing for the next seasons trade, getting out new designs and accumulating stock. These designs are more unique and artistic than ever, and with such beautiful goods in the hands of the small army of traveling men who are soon to make an invasion of the outlying states, they will no doubt make an easy capture of every retailer in the country, and sell them all good bills. We would advise the retailers to place their orders early for the manufacturers will be extremely busy the coming season.

Some days ago a report was published in our dailies that the pal of Varney who robbed Michie Bros., about three months ago, of several thousand dollars worth of diamonds and rings, had been captured in St. Louis It was soon discovered, however, that the man captured was not the right one. Michie Bros. will spare no expense to capture the right man. They will doubtless have him before many weeks. They deserve great credit for the energy they have displayed in their efforts to have this bold and dangerous thief captured.

Negotiations are on for the purchase of the old Dueber plant at Newport, Ky., by the U. S. Cash Register Co., an organization of prominent men of this city with a capital of $500,000.

Michie Bros. have been honored with the appointment of chief examiners of all the watches of the employees of the Baltimore & Ohio Southwestern R. R. Co. July 1st, ended their business year, and they are much pleased with the result, and also with the outlook for the coming season. They are widely and favorably known, continually gaining and never losing customers.

Duhme & Co. report a good business for the season. The manufacturing departments are very active. The wholesale and retail salesrooms have just been handsomely painted by one of our best fresco artists.

John Holland, of the John Holland Pen Co., is on a business trip in the West. He expects to be absent several months. They are having a remarkably good business for the season. Their pens are well known throughout the country and have an excellent sale.

E. & J. Schweikert continue quite busy. Mr. J. Schweikert is on the road meeting with his usual good success. This firm makes a specialty of repairing watches, and are kept very busy in this branch.

Jonas, Dorst & Co., are starting their traveling men out with a large line of handsome samples. They have engaged Mr. J. S. Jepson, in the place of Mr. Geo F. Black who was drowned some time ago.

Mr Awalt of Awalt & Co., is on a trip to Nebraska and Kansas, visiting all the principal cities for business principally, but will combine a little pleasure with it.

Jos. Noterman & Co. have sent out three of their traveling m n with the finest line of samples they have ever produced. These men will have no trouble in selling the goods they make, for they are perfect gems.

Jos. S. Voss & Sons are enjoying a very good trade, and just now are actively engaged in preparing to send out their traveling men.

"You ask me what is the result of our advertising catalogue," said Mr. Nolting, of Oskamp, Nolting & Co. "The result, well, just look." Following his direction, I beheld hundreds of letters asking for catalogues. "You see," said he, "we are spending our money freely to lay before the retail jeweler the largest and grandest catalogue ever published. Our catalogue will guide every happy possessor of one to buy his goods at right prices. Every retail jeweler familiar with the contents of our catalogue is not likely to be overcharged by any one."

HE WAS BARRED.

Pedestrian—So you want work, do you? Well, you can get it by going to that factory over there. There is a placard on the door saying there is work for people of both sexes.

Tramp—Sorry, boss, but that don't help me any, I belong only to one sex.



Proceedings of the Watchmakers' and Jewelers' Union.

[NOTICE.—We shall be pleased to receive and discuss descriptions of new tools, attachments and improvements in any branch of our trade, and publish them free of charge; also inquiries for those desiring information on any point of general interest. Communications should be written as concisely as possible consistently with clearness, on only one side of the paper, and be received here by the 10th day of the month, in order to be discussed at our meeting for that month and inserted in the next issue of THE CIRCULAR. Address them to "Secretary of the W. & J. U., care of THE JEWELERS' CIRCULAR, 189 Broadway, New York." For full information for correspondents, see our Proceedings in THE CIRCULAR for October, 1889.]

Tenth Meeting.—Reported by the Secretary.

The July meeting of the Watchmakers' and Jewelers' Union was well attended, and great interest was manifested in the various subjects discussed. The secretary first read a communication on

DENNISON'S GRAVITY ESCAPEMENT.

STARBUCK, MINN., June 14 h, 1890.

Secretary of the W. & J. U.:

When reading the interesting article on "Clock escapements" by Dudley W. Bradley in the April issue of the JEWELER'S CIRCULAR. I find that the very able writer has forgotten to mention some of the reasons which in my opinion make Dennison's Gravity Escapement far superior to any other escapements invented, and I will herewith try to explain them. What is remarkable about this escapement is that the pendulum receives the whole impulse from the arm's own natural weights when this drops not from the train power, and consequently the impulses to the pendulum are independent of the train power or weight, and the impulse is always the same. This is not the case with the other escapements because they receive the impulse indirectly from the weight which drives the train, and as this weight has to overcome much friction before the power reaches the escapement, and the oil for lubricating the pivots must also be necessarily in different conditions in extreme heat and cold, the power from the weight consequently can not always give the same impulse to the pendulum.

In the gravity escapement the work of the weight is only to drive the train, and the train's part is to lift the arms, and the arm's duty is to give the pendulum the impulse and lock the train or escapement. The above mentioned is not a theory but a natural fact. My master in Christiania, Norway, had an astronomical clock with gravity escapement and mercurial pendulum under his management, the movement of which was made in England expressly for Ingonieur Prosper Nurbeck, who was deeply interested in studying the escapements of very fine clocks and watches. To see whether the weight had any influence on the escapement, we at first used a weight only so heavy as to give the train power enough to lift the arm's, and we let the clock run for about a week and noted the rate. Then we used a weight about twice as heavy, but the clock showed no difference in the rate with different weights or power used. This result can not in my opinion be obtained with other escapements invented. S. L. GAARDER.

MR. EXAMINER, who was called upon to answer the questions of of the correspondent, said that while Mr. Dudley W. Bradley had stated the merits of the gravity escapement concisely and pretty much to the point, the remarks of the correspondent were very welcome inasmuch as they afforded an opportunity to enter into the details of the Dennison's gravity escapement more fully. While he endorsed the points laid down by the correspondent as perfectly correct, he thought there were certain demerits attached to the escapement, which made it at times unsuitable for regulators or pendulum clocks of precision and having a seconds pendulum. Experience has demonstrated that the Graham dead beat escapement has, side by side with the gravity escapement, proved at times the best timekeeper of the two; experiments for a test having been instituted by some of our leading horologists, by astronomers and others. The reasons given for such a result, while being speculative, have a strong air of probability, and one of these reasons is the free pendulum attached to the gravity escapement. By a free pendulum we mean a pendulum not under the continuous influence of a fork or an escapement, such as the "*Graham dead beat.*" Such a free pendulum, if expected to give anything like good time, must have a most perfect suspension, avoiding anything like elliptical motions. Not, that it is to be inferred, that another pendulum clock of precision, having the Graham dead beat escapement, could forego a like perfection in this respect, but the free pendulum would more readily feel the want of it, as the fork and escapement of the dead beat escapement would impart to the pendulum a certain amount of steadiness.

MR. EXPERT said that another point tending to the same conclusion was that a clock with the gravity escapement has to be placed on a rock like foundation, while one with the dead beat escapement can forego something in this respect for the reason stated. The correspondent refers to the change in the oil in different temperatures. Such change would in the dead beat escapement have a distinct effect on the compensation on account of the run of the escape wheel on the locking or resting faces, and this would mask errors in the compensation which could not well be guarded against in a free pendulum, even if adjusted with great care, as it is well known that such adjustments are not permanently perfect, but undergo periodical changes, whether owing to altered molecular conditions of the metals or galvanic action. A free pendulum is also more easily influenced by barometric changes, and finally the unlocking of the gravity arms is subject to a friction, which is by no means constant and which may influence the vibration of the pendulum irregularly in the course of time.

It has been demonstrated that in tower clocks the gravity escapement has given the best results, and has proved to be a vast improvement on the old style of clocks of this sort, which have to move a number of heavy hands exposed to the wind and snow. This improvement is owing to the very point brought forward by the correspondent, that the driving weight in clocks having the gravity escapement may be increased ad libitum without changing the rate of the clock. In conclusion he said he thought it could not be gainsaid, that the gravity escapement may and does at times excel the Graham dead beat escapement in seconds pendulum regulators, but if such is the case the conditions under which it does so are either a fortuitous coincidence of circumstances, or an effort at precision in everything, requiring a comprehensive intellect and a most zealous care.

The next correspondent had a complaint to offer about some earrings he had sold a lady, and wants to know

WHY GOLD TARNISHES?

Kansas City, Mo., July 10th, 1890.

Secretary of the W. & J. U.:

SIR—I have sold to a lady customer a pair of diamond earrings in 18-karat gold mountings, and the setting tarnished to a brown color, when she wore the earrings. Doubting the quality of the gold I had other settings made, when the same thing occurred. Can you explain the cause? F. G. B.

MR. E. RUDITE thought there could be but one cause for this, and that was the presence of sulphur. The writer's customer, he said, was either taking sulphur baths or some medicine containing sulphur, or using some hair dye or other cosmetic containing sulphur. If he investigated the matter he would no doubt find that one of these was the correct theory. The lady would have either to wear tarnished earrings, or discontinue the use of sulphur.

Another correspondent had a question to put

ABOUT SCREW THREADS.

Belvidere, Ills., June 20, 1890.

Secretary of the W. & J. U.:

I have had an argument with a fellow workman about the threads of screws. I contend that a rather coarse thread is the best, and he contends that a fine thread is best. Who is in the right? X.

MR. DETENT volunteered some information on this point. He thought it depended very much on circumstances. Where there is

a sufficient thickness of metal for the screw hole a coarse thread is preferable ; where the metal is thin, a somewhat finer thread is preferable, because for a screw to hold, the first necessity is a certain number of threads. A screw having only two or three threads, he said, as is the case with some of the jewel screws in English watches cannot be said to be durable unless made with exceptional skill and care Some of these jewel screws cease to be effective before the watches go to the gilder, and as there is very little stock between the screw hole and the hole which is to receive the set jewel, there is really no remedy. The necessity of a screw with finer thread almost suggests itself in such a case. On the other hand in Swiss watches, screws are used the thread of which is too fine, and which could and should be much coarser, as the thickness of the metal is ample and the brass into which the screw enters is poor. An additional reason for a coarse thread in such a case is that long screws in Swiss watches seldom run true, a defect which cuts away part of the thread in the brass and very little stock for the screw to hold to; such would not be the case with a coarse screw, the thread being deeper which leaves more stock for the screw to hold to.

MR. EXAMINER added that in our watch factories there is a leaning towards a fine thread, because as most of the screws are made by machine, the waste on account of breakage is less with a fine thread than with a coarse one. On the other hand the objection stated above of screws not running true exists in a much less degree in a machine made screw than in a hand made screw, and fine threads, such as are made in our factories, are not objectionable on this account ; and, as the brass used in our factories is very much harder than the metal used in most foreign watches, a fine threaded screw may be the proper thing in American watches.

The secretary then took up a letter in which the writer asked for

A DEFINITION.

Atwood, Ill., July 7th, 1890.

Secretary of the W. & J. U.:

Can you give me an explanation as to what a "sector" is? G. F.

MR. ISOCHRONAL volunteered to enlighten G. F. He said that a sector is a proportional gauge, consisting of two limbs joined together at one end ; both being graduated at their line of contact ; used principally for sizing wheels and pinions. In its general application it is suited for a proportional measuring gauge for nearly all the requirements of the watch and clock maker.

As the invitation extended to the trade to send in inquiries was quite general, no one was surprised to hear a query

ABOUT MICROSCOPES.

Portland, Oregon, July 8th, 1890.

Secretary of the W. & J. U. :

Noticing the varied information your Round Table columns impart to inquirers, I venture to ask a question which may seem a little out of the way of the regular watch and jewelry business, but in these out of the way places all sorts of jobs fall to the lot of the jeweler and watch repairer, and an amateur scientist has brought to me a microscope for repairs. Among other things to be done is the placing of objects on and between small pieces of glass, and I am at a loss to know how to fasten these glasses together, or how to fasten small insects or other matters on pieces of glass without impairing the effect in their being submitted to observation In the hope that you may be able to give the information desired, I am,

MICROSCOPE.

MR. O'PINION being requested to give his views, said he thought fluid paste which dries quickly, does not crack and adheres tenaciously to the glass, would be required for fastening the glasses covering the microscopic objects. A paste or cement prepared from solutions of dammar resin, asphaltum, or caoutchouc, or a mixture of the last two in very volatile solvents was best adapted for the purpose. After the object to be preserved has been placed in the right position upon the glass, a ring of the paste is formed around it, and the cover pressed down there until the paste has become hard. Benzine, petroleum or bi-sulphide of carbon may be used as a solvent for dammar resin, caoutchouc or asphaltum. If the enclosure is to contain a fluid besides the microscopic preparations, it is best to prepare the paste from a mixture of caoutchouc and asphaltum as this resists fluids better than a solution of dammar resin.

The paste prepared from dammar resin has a yellow color ; that from caoutchouc and asphaltum is black. A white paste is made by rubbing Canada balsam with zinc-white, and adding a sufficient quantity of benzine to give it a syrupy consistency.

To prepare a glue for enclosing microscopic preparations, take one part by weight of white glue (gelatine) and place it in a porcelain vessel ; pour 6 parts by weight of water over it and let it swell for 24 hours. It is then heated until it is entirely dissolved. Seven parts of concentrated colorless glycerine are added to the solution and intimately mixed with it by stirring. The mixture is then heated for 10 or 15 minutes, and filtered while warm through cotton.

The secretary then announced that he had received a communication in reference to MR. REPAIRER, at the last meeting, on how "To Cement Metal to Marble." It ran as follows :

New York, July 9th, 1890.

Secretary of the W. & J. U :

As you solicit correspondence, permit me to say, that from his advice in regard to cementing metal to marble, I infer that MR. REPAIRER has never used the genuine Wm. N. Le Page glue manufactured by the Le Page Company, Gloucester, Mass. This glue needs no paper between the metal and the marble. If the two surfaces which it is desired to unite are first roughened with sand paper. The Le Page glue is almost transparent and colorless when applied clean and thin, and will stick anything together. I could show some work with it that would surprise you. APPLETON.

MR. REPAIRER being asked to respond said : The roughening of the surface of a marble clock with sand paper would hardly be practicable, and the use of W. N. Le Page's glue would, therefore, be out of the question in the case presented by the correspondent.



Considerable interest had been evinced by the members in the artistic efforts of MR. STYLUS, whose sketches for advertising purposes are proving helpful to many both in and outside of the Union. At the invitation of the Secretary, MR. STYLUS then passed round a number of his inspirations, one of which is reproduced. Several suggestions for a caption were made such as "Both Watching and one got left."

There being no further business the meeting adjourned.

IN HOCK SIGNO.

[*Munsey's Weekly.*]

"Diamonds have gone up," said Chipp.

"I put mine up six months ago," said Chapp.

The Art of Enameling.*

(*Continued from page 56, July, 1890.*)

CHARACTERISTICS OF FRIT.



BY COMPARING a sheet of gold and one of copper, on both of which the frit was applied equally thick, the latter metal will appear only bluish or greenish white. By chipping off a corner of the coating, this will be found green on the side to the metal, because when fused on, it dissolved a little of the copper. This may be prevented by making the frit coating a little heavier. This is applied upon the well polished metal surface, moistening this, and dusting the frit powder, tied in a linen rag, very uniformly upon it. This done, the spots which are not to be enameled, are cleaned from the frit, and this is fused.

FUSING.

It is best to perform this operation at once; if it cannot be done at the time, the article must be very carefully protected against dust or accidental rubbing off of the loose powder. The fusing is always performed in the muffle; if the article has curved surfaces, great care is necessary, because the readily fusible mass will soon be so fluid that it leaves the higher places, and the metallic face will show at these places, while at the places where the coating is thicker, it is apt to chip off.

VARIOUS FORMULÆ FOR COMPOUNDING FRITS.

Certain colors can at once be applied upon this basis; they are those which fuse at a high temperature, without altering their color; these are especially blue (protoxide of cobalt), dark red (peroxide of iron and alumina), black (protoxide of iron), and brown (peroxide of iron). The other colors, however, cannot stand the high temperature necessary for smelting the frit, and change their hue. If, therefore, enamel paintings are to be made upon the white frit, a colorless covering frit, consisting of an easily fusible glass, has to be applied first. Such a covering frit, suitable for every color, is compounded according to following formula:

FRIT NO. I.

	Parts by weight.
Quartz powder	60
Alum (free from iron)	30
Table salt	35
Minium	100
Magnesia	5

This mixture, which in its composition is equal to a lead glass, can be made still more fusible by decreasing the quantity of the alum one-half; the degree of fusibility is still increased by leaving the alum out entirely.

For very sensitive colors, especially those produced with purple of cassius, from rose to deep purple, it is better to use the following covering frit, which smelts easily, and exerts no influence upon even the most delicate hues.

FRIT NO. II.

	Parts by weight.
Quartz powder	3
Washed chalk	1
Calcined borax	3

*It is advisable to correct two typographical errors which occurred in Part I (July), in formula II, second paragraph, line 2, read minium, instead of orinium; and in the 5th line from the bottom of same (second) column, read: "If the frit is to be smelted upon sheet gold or silver," in place of "shell, gold or silver."

Many enamel painters work in such a manner that they fuse upon the basis the covering frit, and execute the painting upon this; the work, however, may be simplified by melting the covering frit at once with the color, and painting with this mixture. The frit then fuses together with the color, and adheres to the basis.

For producing these painting colors, the pulverized covering frit is, by washing, changed into a very fine powder, mixed with the corresponding color in very definite proportions, and the whole is smelted in small crucibles. The fused mass is then pulverized and washed again, and can be used for painting. It is evident that in this manner the fused color is only of one deep shade; in order to have graduation the composition is to be toned down by an addition of colorless covering frit, and it is advisable to prepare an assortment of ten shades, calling the unadulterated substance No. 1; a somewhat lighter shade is obtained by smelting 90 parts of No. 1 with 10 parts of the colorless frit; No. 3 is composed of 80 parts; No. 1 and 20 of the latter, etc. In order to be certain of the effects produced by each number, it is well to prepare a sample plate with the ten numbers. The painter must often have more than these ten grades, and he must then rely on his skill and practice to prepare intermediate ones, to be produced in the same manner as the first.

The colors ground, with lavender oil, are applied upon the covering frit with a brush. The picture, when finished, is next subjected to fusing, and the greatest amount of care must be exerted in this process, because by a slightly incautious treatment, at the last moment when about finished, the whole work may be utterly ruined. The muffle, in which the enamel picture is to be fused, must be only warm enough to smelt the covering frit; the article is first gradually warmed, because by a precipitate heating the enamel layer might crack on account of the unequal degree of expansion of the latter and of the metal. The pre-heated article is then inserted into the muffle, and left in it until the covering frit arrives at a state of fusion, and unites with the base frit. By an unduly strong heating the covering frit becomes so highly fluid that the individual colors merge into each other, and the picture does not have any clear and plain contours, but looks blurred, which, of course, deteriorates the value of the small delicate pictures which are occasionally used as ornaments on jewelry.

THE ENAMELING WITH ENAMEL PASTE.

From above details of the work necessary for enamel painting, it will be seen that this art is very laborious, and requires considerable amount of attention; it is, therefore, appropriate only on high class jewelry. It is often desirable, however, to use enamel on lower-grade jewelry, and this may be done by using the so-called enamel paste. This consists of a covering frit, which by a suitable variation of mixture proportions, has had imparted to it a lower degree of fusion; for instance, according to the following proportions:

	Parts by weight.
Silicious (quartz) sud	60
Chalk	30
Calcined borax	60
Minium	10–30
Tin oxide	5–90

This charge, after having been smelted, is powdered coarsely and again smelted with the addition of such pigments as stand a high degree of heat. Colored masses, which according to the pigment used, show a superior or inferior degree of intensity, for instance, protoxide of cobalt produces shades from light forget-me-not blue to the darkest pansy blue; sesquioxide of iron and alumina dark red; a large quantity of protoxide of iron makes a black, etc. These color pastes are in a smeltted condition poured into water, powdered, and for large surfaces they are fused in the muffle, while for smaller ones, they are simply fused with the blow-pipe. Before applying the enamel paste, the previously brightened surface is moistened with borax solution; the mass is then applied, first heated over live coals, in order to evaporate the water, and then fused. The entire work of enameling is performed at one operation.

The Waltham School of Horology.

SKETCH OF D. D. PALMER, ITS FOUNDER AND PROPRIETOR.

ONE OF the best known horological experts in the United States is D. D. Palmer, of Waltham, Mass., proprietor of the well-known Waltham School of Horology, an institution which for nearly a quarter of a century has stood in the position of a pioneer in the work of horolo ical instruction in this country, graduating hundreds of young men now prominent in watch factories and jewelry stores from the Atlantic to the Pacific.

D. D. Palmer was born in Bridgewater, N. Y., in the year 1837. His father was a cabinet-maker, and nearly all his progenitors and relatives were of a mechanical turn of mind. Young Palmer attended school until he was twelve years of age, and then commenced learning the watchmaker's trade at home, experimenting and investigating every problem in horology for himself. Even from earliest childhood he had been interested in watches, and we can presume that the burden of his infantile utterances was the once familiar: "want to see wheels go wound." He soon became an expert watchmaker, and there was no branch of the subject which he had not thoroughly mastered at an age when most youths are just beginning the study of horology. This is the more remarkable when it is remembered that he had no guide or instructor to assist him in his studies, but was obliged to rely upon his own native ability and perseverance. His skill soon won for him a wide local reputation, and he had all the work he could tend to. At the age of eighteen he opened a jewelry store of his own in West Winfield, N. Y., and three years later moved it to Newport, same State. Here he carried on the jewelry and repair business, and also made complete watches after his own model. In the prosecution of his business he was quite successful, and only his natural liking and aptitude for the details of watch manufacturing could have led him to seek a new home in Waltham, which he did in 1863, when the factory was just coming into notice, and there was consequently a demand for inventors and mechanics of this class. A good idea of Mr. Palmer's mechanical abilities at this time may be gained from the fact that he was fully competent to work on any job in the factory they might see fit to give him. He began on the springing and finishing job, but as a reward of merit he was very soon changed to the adjusting first quality. There he remained a valued employee because of his thorough knowledge of all the branches of watchmaking, until 1875, when he started manufacturing a watch of his own construction, called the "D D. Palmer," a three-quarter plate, stem-wind movement, full ruby jeweled, exposed escapement, fully adjusted. The stem wind which is entirely different from others, is an invention of his own. Instead of the intermediate wheels being rocked on the yoke, the crown wheel is swung from the winding wheel to the dial wheels The center of oscillation is therefore at the center of contact of the winding pinion with the crown wheel, and the crown wheel receives no rotary notion whatever, entering the winding wheel on a line of centers that prevents moving or jumping the hands in moving the gears either in or out of contact. Although manufactured in limited numbers, these watches sustain a high reputation for accuracy and delicacy of finish and adjustment.



D. D. PALMER.

Besides his work at the watch factory and in the manufacture of the "Palmer" watch, Mr. Palmer has attained a widespread reputation as a maker of models for inventors in horological and other lines, and many improvements on watches and parts thereof are due to his mechanical skill. Among the many tools and appliances he has devised for performing the more difficult operations in watch work may be mentioned two for adjusting and isochronizing, by the latter of which a spring can be isochronized before it is applied to the watch at all. He is constantly receiving desperate cases in the repair line from all parts of the country. But full as Mr. Palmer's life has been of fruitful effort, perhaps his most congenial and effective labors have been expended in the line of horological instruction. From about his twentieth year, while still living in New York State, it was Mr. Palmer's habit to teach a few apprentices the practical science of horology during the evening hours. In those early years it was at once a labor of love and a source of profit to him. This he continued to do after his removal to Waltham; his reputation as an instructor growing rapidly as youth after youth went out from under his tuition to take prominent positions in the store or in the factory. So numerous did the applications become for the privilege of learning the art under his care, that upon resigning his position at the watch factory, Mr. Palmer decided to devote more of his time and attention to this work, carrying on in conjunction with it the manufacture of the "Palmer" watch. His exceptional natural abilities as a mechanic, and his long experience both at the bench and in the factory, render him well fitted for the difficult task of imparting to the youthful mind the intricacies of the horological art, while, as an additional qualification, he is devoted to the work heart and soul, and is constantly among his students criticising and expounding.

The Waltham School of Horology is located in one of the pleasantest parts of the beautiful little city of Waltham, at the residence of Mr. Palmer, who is thus enabled to exercise the most complete supervision over the studies of his pupils, both day and evening. Here the boys are taught every operation required in the repairing and manufacturing of watches, many of the tools for performing certain delicate operations being of Mr. Palmer's own invention, and to be obtained nowhere else. Those students who desire to work evenings are given the privilege, and, in short, nothing is forgotten that can add to the comfort and aid the progress of the students of the institution. Over four hundred graduates in the different branches of watch making bear testimony to the thoroughness and practical value of the instruction imparted by Mr. Palmer. To keep pace with the growth of the institute, an addition has recently been built for school purposes, furnishing accommodations for fifty students all told. The whole establishment has been refitted, electric light and power put in, and preparations made for the accommodation of the increasing numbers who are desirous of availing themselves of the superior advantages for horological training offered by this school

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WARRANTY.—A story is told of a very skillful repairer who warranted all his work, provided no other workman made the slightest alteration, or was allowed to handle it, as from that time forward his warranty ended. In order to know whether a watch had been tampered with, he always placed the holding screw and other parts in such a position that if he found those screws or parts in any other position, he knew at once that some one had had the movement out of the case, or been looking at it. He also had one invariable method of fitting on the hands, fastening the dial plate, etc, which was both sure to "stay put," and enabled him to detect any change that had been made.

Fashions in Jewelry

A Lady's Rambles Among the Jewelers.

FASHIONS IN STONES.

It may not be that the use of gems is more lavish than ever before—probably it is not, remembering how common they were in Biblical days, and the old story of the Duke of Buckingham's coat when he went courting for his king. But they are more lavishly used at present than within the memory of this generation. It is the coiffure that reaps the unique splendor of gems. Odd jewels, either of size or in lustre, are kept for the hair where they can be displayed in solitary glory, and are mounted usually on two-pronged hair pins.

*** *** ***

A cabochon sapphire, for example, two inches and a half long, stands upright in a calyx of diamonds, like a folded tulip bulb in a hair pin. Another hair pin has two emeralds cabochon an inch and a half long flanking a tremendous pear-shaped pearl, each of these upheld by a calyx of diamonds. A diamond aigrette has for its starting point a tremendous oblong stone a little off color; from this branch off lines of light enclosing widening zig-zags before a chevaux de frise of feathers—a magnificent ornament.

*** *** ***

A circlet of fine diamonds encloses a clover leaf of which each petal is an emerald. The cutting gives it a lustreless table, and the indentation of the leaf is rendered by its setting of gold wire, which is so admirably managed that for all the world it looks as if a notch had been cut in each gem. This is a brooch and a treasure to own. An emerald pendant consists of one stone over an inch square set with diamonds and suspended from a diamond loop.

*** *** ***

A new form of brooch is a leaf made of gold wire with emeralds sunk in the wire. There are also shaded leaves from emeralds, rubies, spinels and pale topazes.

*** *** ***

The opal is holding its own nobly. A magnificent brooch with pendant is made of two unusually large opals. The brooch part is at least two inches long and the pendant scarcely less in size. Both are set in diamonds.

*** *** ***

Shoe buckles, which may be also used as shoulder clasps, are of silver lace sewn with diamonds and having turquoise centers.

*** *** ***

Fancy the finger ordained to wear a marquise ring containing seven emeralds of graduated size and surrounded by diamonds This ring is at least three inches long and would render any finger helpless.

*** *** ***

A new necklace is a band of finely wrought lace oxidized until it is nearly black, and pierced at about an inch apart with large diamonds. It will be vastly becoming to its fortunate possessor whoever she may be.

*** *** ***

There are no lovelier ornaments than some of the new watches. One is a flower made of pinkish-hued cabochon rubies in which the inequalities of nature are carefully copied. The center is a tremendous diamond. The chatelaine is a love knot of diamonds holding two wreaths of diamond sprays and ribbons of white enamel. The dead whiteness of these ribbons is a most artistic touch.

The most gorgeous Oriental daggers are made for the hair of rich yellow gold. In one the only variation of color, which is of quality not degree, is in large deep yellow topazes. Another has a superb handle of pale green tourmaline and ruby spinels. The piece is crowned by a ruby spinel cut cock's comb fashion. It is superb in workmanship and color.

*** *** ***

Structural and decorative forms, such as are found in Moorish and Celtic architecture, are worked out in gems. A brooch has for its center a large emerald; the next large forms are diamonds; emeralds and diamonds alternate at the point of intersection and in the terminals. The effect is not only rich, but there is a calm harmony of proportion that is very satisfying to the eye.

*** *** ***

The ingenuity with which heart-shaped jewelry repeats the popular form is worthy of notice. There is first a large pearl heart. This is entwined with an interlaced gold ribbon so as to make more heart forms, and in these are hung moonstone hearts.

*** *** ***

Pale pink coral is used judiciously in floral jewelry. A diamond spray will have a large pale pink bud held in a diamond calyx. The calyx, by the way, is the favorite setting of large pieces. Large irregular pearls are held in that way as the heads of hair pins.

*** *** ***

Queen chains are made in tiny cubes, holding alternately diamonds and pearls and diamonds and rubies.

*** *** ***

Chatelaine watches in white enamel, with stones and reedy foliage and flowers in colors, are among the novelties for summer wear.

*** *** ***

The old-fashioned handcuff bracelets in gold have reappeared, but they seem so heavy and hot for dog-day wear that the probability is they will have to wait until fall for full recognition.

*** *** ***

Chains of all sizes and kinds prevail in bracelets. The different parts of the links are treated differently. One will be gold, another platinum; one plain, the other chased. In the center gems are sunk or there will be a line of rubies and diamonds alternating.

*** *** ***

A new bracelet is a band of woven gold tape.

*** *** ***

A string of enamel buttons overlapping one another is used as a bracelet.

*** *** ***

A pretty trifle is a large yellow topaz transformed into a star by tiny diamond points.

*** *** ***

Is superstition increasing? There are such number of lucky brooches and pendants. A horseshoe of turquoises will be twined with ribbons so as to make clover leaf forms. Horseshoes and the shamrock are used in every conceivable way.

*** *** ***

Stick pins and scarf pins strive for novelty. Men are fond of adding to their collections of odd scarf pins. One man is known as "Scarf Pin Harry."

A PEARL fish with a gold head and tail is a new scarf pin.

*** *** ***

THE New York Yacht Club pennant with a diamond star is one of the latest forms.

*** *** ***

EVERYWHERE that a woman can put a stick pin she does it, which leads to the belief that there is still a long lease of life for these pretty trifles.

*** *** ***

GOLD thimbles are covered with minute daisies in relief instead of being penetrated with the usual needle holes.

*** *** ***

A PEARL fish with gold head and tail serves as a scarf pin.

*** *** ***

BLACK ribbons with gold fleur-de-lis are often used instead of bows.

*** *** ***

A CORAL leg wreathed in flowers is mounted on a gold standard as a seal.

Summer Jewelry in Silver.

SUMMER jewelry is the prettiest thing that has appeared in a long time. It is of enamelled silver in all the new interlaced and geometrical forms, and the prevailing tints are white and turquoise blue. These are used in combination, relieving one another daintily. The divergence from these forms is in knotted rope designs of white enamel, suggesting yachting costumes, and, of course, the sentimental heart, suggesting strolls on the beach and down the mountain side.

*** *** ***

THE flowers in white enamel on silver are the daintiest things imaginable for vapory summer toilets. Women should be infinitely obliged to the men who are designing for them such ideal jewelry.

*** *** ***

FOR mourning is lustreless black enamel on silver in the form of pansies and wild roses and sprays of laurel.

*** *** ***

A FOLDED knot of white and black enamel makes a suitable mourning pin.

*** *** ***

BLACK cats with diamond eyes, and likewise rabbits are introduced in enamel. Sometimes the cats have white markings copied with great minuteness from nature.

*** *** ***

SILVER brooches copy flowers, but leaves offer better designs. Graduated ivy leaves overlapping one another, the shamrock with its stems wound around making a sort of framework for the leaf. The graceful maple with its notched edges and decorative twining, sweet pea leaves with a couple of folded buds, and the thistle with its prickly edge are the favorite models. Many of these leaf pins have a pearl as a drop of dew, and more have iridescent insects as an additional ornament.

*** *** ***

THREE camels and deer in groups of three are reproduced as silver lace pins.

THE lotos furnishes the newest designs in enamelled ornament for silver.

*** *** ***

THREE faces painted in enamel are used as lace pins. The lineaments are not of those of the painters' cherubs, but are every day sort of faces and might be thought portraits.

*** *** ***

THE new bell buckle is made of anchors caught within one another.

*** *** ***

AN oxidized silver stocking and garter, looking just as if it had been pulled from the foot, makes an ash receiver.

*** *** ***

A TINY watch is set in the center of a silver dollar.

*** *** ***

SHELL bands for the hair are set with silver fleur-de-lis.

*** *** ***

A SILVER stamp box has the New York post mark and a stamp in red enamel.

*** *** ***

A LITTLE round silver repousse cylinder has been made to hold a spool of cotton.

*** *** ***

LONG perforated cylinders of silver are called perfumers. They are intended to be fitted with cotton which has been saturated with perfume and laid in drawers.

*** *** ***

A POLISHED silver match box has a parlor match in enamel on the back, and the legend "A match for you."

*** *** ***

HAIR pins and bonnet combs are reproduced in silver with fine perforated carvings, copying and rivalling the gold combs and pins that were first in the market.

*** *** ***

LONG silver chicken feathers and bird wings are used as brooches.

*** *** ***

SILVER sleeve buttons are used with the shirts that are now universally worn by women. They have heraldic designs with a place for the initials; others have a Japanese aspect, and knots and folded ribbons are also popular. The two buttons are always different. Often they appear as sections of wide and narrow chains.

*** *** ***

BRIAR wood pipes are adorned with polka dots, stars and silver fleur-de-lis.

*** *** ***

TRAVELING clocks are set flat in russet leather.

*** *** ***

SILVER should be kept clean in ammonia and powder.

*** *** ***

SILVER button hooks and shoe horns come in sets.

Silver bracelets are more worn than ever. The slender bangles united by a bar have come into favor again.

*** *** ***

Bracelets in filigree silver have been introduced. They are made up of oblong blocks and daintily fine.

*** *** ***

Coiled serpents and twists and links are still in favor as bracelets.

*** *** ***

An interesting silver box has an ornamentation of figures in which the faces, hair and little details of dress are enamelled. The etching is done with the lightness of a sketch, and, in fact, the work resembles some of the hasty head and tail pieces seen in the French journals, which is to say, they are extremely clever.

*** *** ***

Silver vases, suggesting Egyptian columns with ornamentation taken from the lotos in colored enamels, have been observed.

*** *** ***

For a silver alcohol lamp is a porringer in copper enamel with etchings of ready designs.

*** *** ***

For the helpless ginger ale bottle has been provided a silver slab on a standard, with a round hole in the middie which the bottle just fills.

*** *** ***

The racing and fishing seasons are responsible for flasks in eve y conceivable design. One is oxydized, and through the ground the silver is seen in multitudinous sprays. Another has Renaissance foliations made to suggest wave forms under which are mermaids. There is scarcely a sport that does not appear on a liquor flask ; but none are prettier than those which are made to imitate wicker work.

*** *** ***

Flasks in colored glass with bulls-eye effects set in silver cups have been introduced.

*** *** ***

Siphons mounted in silver have been provided for table use.

*** *** ***

Spectacle cases in silver repoussé work hang from the hilt like a chatelaine.

*** *** ***

Leather spectacle and eye-glass cases have silver shields for the name or monogram.

*** *** ***

Silver gilt oyster forks have smoked pearl handles.

*** *** ***

Silver gilt sugar sifters for bridal presents have the bowls in fine repoussé work.

*** *** ***

Silver toothing bells have handles of carnelian and pearl. Others have substantial chased handles in shape something like a shoe horn.

*** *** ***

Glass scent bottles with silver garlands and other overlying ornament are produced for chatelaines.

Glass, China, Brass and Bric-a-Brac.

Glass coasters for flowers have been introduced. They have twisted tubes of glass uniting in the border and are a pretty substitute for silver.

*** *** ***

Plain glass wine sets with a gold edge have an air of elegance. There is a disposition to combine gold with glass that is frequently seen in elaborate incised ornament lined with gold.

*** *** ***

Thermometers are set in porcelain with flowers in relief.

*** *** ***

Dresden plates of odd shapes are used to mount sconces.

*** *** ***

Glass candelabra have brass mounts.

*** *** ***

Watches are set like compasses in cubes of carnelian and onyx.

*** *** ***

Berlin atomizers intended for perfuming a room come with large shaded globes of fluted glass and make an attractive ornament.

*** *** ***

Glass ewers decorated in white enamel and gold are as exquisitive as lace work.

*** *** ***

Shaded leather leaves in yellows, pinks, blues and greens are used to display jewelry.

*** *** ***

A Lustrous green jardiniere is ornamented with steers in relief, whose yokes serve as handles.

*** *** ***

Miniature hall clocks in red enamel and ormolu mounts make suitable ornaments for a bracelet.

*** *** ***

Square wood frames, polished and varnished, instead of mats, have a silver wreath around the inner edge.

*** *** ***

Smoked ivory is used for handles wherever it can be applied.

*** *** ***

Hand glasses in odd shapes are framed in Austrian enamel and set with colored stones.

*** *** ***

Normandy buckles set with pink and blue stones have found their way to this country.

*** *** ***

Russian damovars are not manufactured as yet in this country, but they are gradually being acquired. A hostess thinks herself fortunate in possessing such a handsome decorated object for her entertainments. In time they will yet be introduced among novelties in brass.

*** *** ***

Stuffed game disposed against oval wooden plaques are offered for dining rooms.

*** *** ***

Even garters have gauze bows for hot weather. Elsie Bee.

Neglected Problems.*

No. 2.—Part III.

WHEEL AND PINION GEARING AS LEVERS TRANSMITTING POWER.

By "Excelsior."

(*Continued from July* Circular, *page* 48.)

IN THE last article we saw how the simple lever might become modified into a wheel and pinion, and considered the general properties of both of them. We also found that the power transmitted or the work done by them is computed by multiplying together the number of units of force or weight applied, the units of space traveled over in a given unit of time, as a second, and the units of time during which that continued to be done. We now have to apply these general principles in the arrangement of wheels and pinions for practical work.

CALCULATION OF GEARING.

First let us trace out how a series of wheels and pinions corresponds to a series of levers. Fig. 14 represents a train of gearing which includes the main, center, third and fourth wheels, with their pinions.

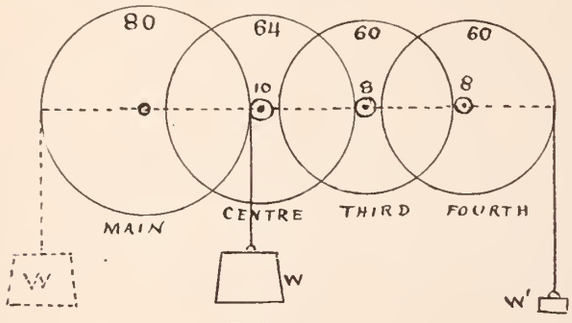


FIG. 14.

The force of the mainspring is represented by the weight W, which we will call 360, that being the number of grains the spring can lift through one mil.-inch (1-1,000 inch) in one second, and W^1 represents the amount of force which the fourth wheel receives from the mainspring and can exert on any object. The larger circles represent the pitch circles of the wheels, and the smaller interior circles those of the pinions,—all being drawn as rollers acting on each other.

In Fig. 14 the respective sizes of the different parts is shown in the conventional way, by giving the numbers of their teeth and leaves, inasmuch as their relative diameters (and also their radii, or semi-diameters) should correspond to those numbers, *i.e*, if a wheel and a pinion have sixty teeth and ten leaves, their respective diameters should be sixty and ten, or the pitch diameter or the radius of the wheel should be six times that of the pinion, whatever the actual sizes may be. If these diameters do *not* have the same ratio as those numbers, then that gearing is defective, and should be corrected, as directed in article No. 1. This method, by counting the number of teeth and leaves, is much easier than the actual measurement of the pitch diameters of the parts, and serves the same purpose. If we know the several *proportions* for reducing the value of the weight W, it is just as well as if we had the actual sizes of all the parts and made our calculations with them.

Following the foregoing suggestions, we easily calculate as follows: The main wheel has 80 teeth, and the center pinion has 10 leaves, therefore the center pinion and wheel revolve 8 times to each revolution of the main wheel. But as the power given out by the main wheel is represented by the weight W, suspended from its circumference, W also represents the power applied to the center pinion. The power W would properly be represented on the other side of the main wheel, as in the dotted lines. But for convenience of comparison with Fig. 15, it is shown as applied to the center pinion.

For convenience of calculation (and without any reference to sizes actually used in watch work), we will suppose that the center wheel has 64 teeth. The length of the short and long arms (leaves and teeth) to the centre of the pinion arbor will be 10 and 64. The power deliverable at the circumference of the centre wheel will be 10/64 of W, or 56¼ grains. This wheel of 64 teeth works into a third wheel pinion of 8 leaves, therefore the third wheel revolves $64 \div 8 = 8$ times to each revolution of the center wheel, but receives only ⅛ as much impelling force as the center wheel received.

The third wheel has 60 teeth and its pinion 8 leaves, so its lever arms will be as 8 to 60, hence the force given out by its teeth will be less than that given out by centre wheel teeth in the same ratio, *i. e.*, the centre wheel tooth has 7½ times as much energy as the third wheel teeth, but the latter move through 7½ times as much space. The third wheel works into a fourth wheel pinion of 8 leaves, therefore the fourth wheel revolves $60 \div 8 = 7\frac{1}{2}$ times as fast as the third wheel, or makes 7½ times as many revolutions.

The fourth wheel has 60 teeth and its pinion 8 leaves, therefore its short and long arms will be 8 and 60, and its teeth will deliver a force less than that which its pinion leaves received, in the ratio of 8 to 60, *i. e.*, the force received by its pinion leaves is 7½ times that deliverable by its teeth, and represented by weight W^1.

By multiplying 8, the ratio between the center and third wheels, into 7½, the ratio between the third and fourth wheels, we get the number 60, showing that the fourth wheel (which carries the seconds hand) makes 60 times as many revolutions as the center wheel, but has only 1/60 as much energy. Therefore if the force of the center wheel be called 60, it will, while revolving once in one hour, give out $60 \times 1 \times 1 = 60$ units of work. The fourth wheel will have only a force of one, but it revolves 60 times in one hour, and the product is $1 \times 60 \times 1 = 60$ units of work, as before. This is only true, however, if we compare the energy of the center wheel with that of the fourth wheel *at the center of each wheel.* If we compare their forces at their *circumferences*, we find that the center wheel has only $7\frac{1}{2} \times 7\frac{1}{2} = 56\frac{1}{4}$ times as much force as the fourth wheel, instead of 60 times. This has doubtless proved a stumbling block in the path of hundreds of workmen when beginning to calculate gearing, and led them to think it a very complicated and difficu't subject, because they could not make the decrease of force equal to the increase in the number of revolutions.

COMBINATION OF LEVERS.

This will be more clear if we represent our gearing in the usual mechanical methods, as in Fig. 15, which shows levers corresponding to the center, third and fourth wheels and pinions. The weight W represents the pressure or force of the main wheel as applied to the center pinion. The figures represent the lengths (either relative or

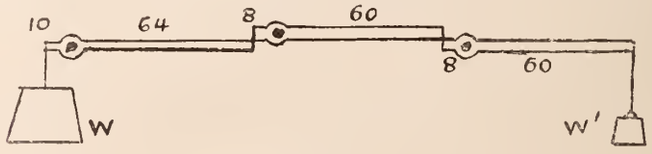


FIG. 15.

real) of the long and short arms of the several levers, from their ends to the points in the centers of their axes, *i. e.*, in the centers of the pivots.* W^1 is the resistance, or amount of power exerted by the fourth wheel teeth.

CALCULATION OF POWER AND VELOCITY.

According to the laws given at the beginning of this article, the velocities of the two arms of a lever are in the ratio of their lengths, but their powers are in the inverse ratio of their lengths.

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* To correspond strictly to the sizes marked in Fig. 14, these figures should be reduced one-half, because these represent *radii* or semi-diameters, while those represented the diameters of the parts. But as the *proportions* are the same throughout, in both cases, it does not affect the result, and in order to make the two easily comparable, and have the same calculation answer for both, the figures are left so.

To get the velocity obtained by a series of levers, or the gain in space traveled over, we therefore say :

The velocity of the power arm is to that of the resistance arm,

as the length 10 is to the length 64, and
" " 8 " " 60, and
" " 8 " " 60, *i. e*,

as the length of the power arm is to that of the resistance arm.

To get the power of a series of levers, or the ratio between the power applied at one end of the series and the power deliverable at the other end, we reverse the positions of the figures representing the lengths of the power and resistance arms of the several levers, and say :

The power of the power arm is to that of the resistance arm,

as the length 64 is to the length 10, and
" " 60 " " 8, and
" " 60 " " 8, *i. e.*,

as the length of the resistance arm is to that of the power arm.

The short method of calculating such a series of levers is to multiply all the power arms together, and all the resistance arms together, and divide one product by the other, to obtain the ratio between them, thus :

$$\text{Length of power arms} = 10 \times 8 \times 8 = 640 \qquad \frac{640}{230{,}400} = \frac{1}{360}$$

$$\text{Length of resistance arms} = 64 \times 60 \times 60 = 230{,}400$$

That is to say, in this combination of levers, shown in Fig. 15, the result is the same as would be given by a single lever having a power arm of 1 and a resistance arm of 360 in length. The same equation represents both the decrease of force and the increase of velocity or space travelled over, and shows that the fourth wheel acts with 1/360 the force of the main wheel, but its tooth or teeth travel over 360 times the distance, and it therefore does the same amount of work as that, *minus* the losses by friction, etc. If the force at the main wheel was 360, the force deliverable by the fourth wheel will be 1, but its velocity will be 360.

All this being perfectly clear, we are now ready to proceed to more difficult matters. Thus far we have only dealt with straight levers and simple calculations.

OBLIQUE ACTION OF LEVERS.

In the foregoing cases the power is applied and received at right angles to the lever arms, as will be seen by inspecting the figures. But that condition can exist only for an instant, inasmuch as the levers will move forward and the action will become oblique. When that occurs, the actual lengths of the levers will not represent their geometrical or working lengths, unless special means are employed to cause them to do so, and thus enable a gearing to transmit a constant amount of power. It evidently cannot do that while the acting lengths of the levers, *i. e.*, the virtual sizes of the wheels and pinions are continually changing. Fig 16 will illustrate this oblique action. *A C* is the power arm of a lever, *B C* is the resistance arm, and *C* is the fulcrum, as in the preceding figures. *A C* is as

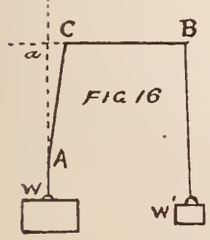


FIG 16

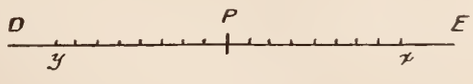


FIG 17.

long as *B C*, but a weight of 2 pounds at *W* will now only balance say 4 ounces at W^1. It is easy to say that this is because the action is oblique, but that does not explain it, nor does it tell us how to compute the power of lever arms so situated. The real reason is that the working length of the power arm is but ⅛ of that of the resistance arm.

VIRTUAL LEVER ARMS.

This working length is called the *virtual* length of a lever arm, because the lever acts as if the arm was of that length, and it virtually is so To ascertain the virtual length of the power arm *A C*, we prolong the line *B C*, of the resistance arm, and the line *W A*, which represents the direction in which the power is applied, till they meet at *a*. It is evident from simple inspection that the weight *W* will produce the same effect if suspended from *a* as from *A*, and *a C* is therefore the virtual power arm. We can measure this from *a* to *C*, and we at once have the relative lengths of the two lever arms and can proceed with them to make any desired calculations of power or velocity, according to the methods already given. It is not always so easy as it is in this case to reduce oblique to direct action for purposes of calculation, but if the workman will read carefully the following explanations, he will get a clear idea of the principles involved and the method to be followed.

First we will consider the case of a body when acted upon by two or more forces at the same time—a subject which is called the *composition of forces*, because the forces combine and virtually compose a single force, whose action can be calculated.

A force applied in one direction may produce motion in an entirely different direction. Two or more forces acting in different directions may be applied to a body, and the resulting motion may have a direction different from any of them. Yet in every case there can be but one result, whether in direction or amount of power deliverable, and the result can be accurately calculated.

REPRESENTATION OF FORCE, SPACE AND DIRECTION.

We can represent not only direction, but also the amount of force or of space, by means of lines and points marked upon them, and a drawing of a combination of such lines is called a diagram. For purposes of calculation we must choose some single *point* in a body, whether it be a lever or anything else, and make all measurements and calculations with reference to that point. Whatever the motion of that point may be, it is considered as the motion of the body itself. In the case of a falling or freely moving body, that point is its centre of gravity. In a lever, it is the point which is acted upon by the power, the resistance, or the fulcrum. In a train of gearing it is the point of contact between the tooth and the leaf, or the centre of the axis or pivot.

When a material point moves it describes a continuous line, either straight or curved, which is called its *path*. The rate of the motion is called its *velocity*. When the velocity is uniform it is measured by the number of units of space moved over in a given unit of time, as, for instance, so many inches in a second. Multiplying this velocity by the number of seconds that it continues, gives the actual motion of the body during the given time.

Let us draw a straight line, *D E*, Fig. 17, and suppose our force to be applied at the point *P*, acting along the line *D E*. Then *P* is called the *point of application* of the force. If it acts towards *E* its direction is said to be *P E ;* if towards *D*, its direction is *P D*—the two letters being named in that order which represents the motion from the point of application to its destination. Therefore, when we say that a force acts on a point *P*, along the point *P E*, we mean that it acts from *P* to *E ;* if we say along *P D*, we mean from *P* to *D*.

Let us suppose that a force which acts on *P* along *P E* contains *x* units of force or energy. Then from *P* towards *E* we measure the distance *P x*, containing *x* units of length. (*x* may be 5 or 500, or any number whatever, and the units of length may be inches, mil-inches, or any other unit.) This line now accurately represents the force, for the line *P x* is drawn from *P* in the direction *P x*, and contains *x* units of length, just as the force acts on *P* in the direction *P x*, and contains *x* units of force. If the force acts on *P* in the opposite direction, it would be said to act in the direction *P D*, and would be represented by the line *P y*, equal in length to *P x*.

FORCE ACTING ALONG THE SAME LINE.

If two or more forces act on the point P in the same direction $P E$, they are equivalent to a single force containing as many units of force as all of them combined, and acting in the direction $P E$. If equal forces are at the same time acting on P in the direction $P D$ they will be equivalent to a single force equal to their sum, acting in the direction $P D$.

Under such circumstances, as equal forces are acting in opposite directions at the same time, P will have no tendency to move in either direction, but will be in equilibrium, since the opposing forces are balanced. But if the forces acting towards E are not equal to those acting towards D, then P will have a tendency to move in the direction of the greater forces, with a force equivalent to their excess over the opposite forces. This excess of force is called the *resultant* of all the forces acting on P. We can ascertain the number of units of force in this resultant by adding together the forces acting in each direction and subtracting the lesser from the greater sum—the remainder being the number of units of force remaining free to act upon P. The effect of this resultant force upon P will be the same as if all the forces which are balanced against each other did not exist, and only the resultant force was applied to P. In the case where the opposing forces are equal, there will be no remainder on subtracting one sum from the other, and the resultant force will be zero, *i.e.*, the same as if no force was acting on P.

The foregoing supposes that all of the forces act in the same line $D E$. If, however, the different forces act in different directions, and not all in the line $D E$, then there is a very different state of things. The principle of oblique action comes into play, and the resultant of the different forces is to be ascertained in a quite different way. The various forces may balance as before, or there may be an excess of force in some direction, and in that case we can ascertain what the excess or resultant is, and the precise direction in which it will act. This will be explained in the next article.

(*To be continued.*)



THE HARVEST IS GREAT BUT COLLECTIONS ARE FEW.

[From Our Special Correspondent.]

Minneapolis, Minn., July 13, 1890.

One united wail goes up from the wholesale and manufacturing jewelers of the Twin Cities as to the difficulty found in making collections. Business, so say we all of us, is good, better than usual, but its like getting blood out of a turnip when it comes to money. The real estate market has been as quiet as Greenwood for some time, and people are meeting so many payments upon property they expected to sell before now that money in the Northwest is scarce, but prospects extremely promising for crops, unless tornadoes, or chinck bugs, or some one of the numerous fatalities which seem ever to swoop down upon the farmer, blast present hopes of a tremendous production throughout Minnesota and the Dakotas.

Reed & Dailey says collections keep them in a fever bad for the constitution this hot weather, and A. J. Warner, of the Warner Jewelry Co., says that in all the ten years he has been in business in Minneapolis, he has never before seen the equal of these days for collections, though sales keep good. By the way, H. M. Carpenter, of the Manufacturers' Jewelry Manufacturing Co., between whom and the Warner Jewelry Co. there has long been considerable ill-feeling, is suing R. J. & M. E. Warner for $1,000 on a promissory note.

The prominent retailer, H. F. Legg, says :—"There has been considerable call for medium priced goods, while higher priced articles have held their own. This shows more than anything else that everything is booming, for wealth can always secure what it desires, but only when money is everywhere plenty will business show the advance it does now."

J. M. Donelson, the Manufacturers' Jeweler, who opened a store in Butte, Montana, where he claims to have been robbed of $10,000 worth of jewelry in April, has just returned to this city, greatly indignant at the insinuations cast upon his business honor by the papers both there and here. These insinuations have been that he robbed himself to defraud his creditors. He will institute a libel suit against a Spokane Falls, Washington, newspaper, which out-and-out accused him of complicity in the robbery. The case has attracted considerable attention. He insists that he courts the fullest investigation.

The statement of Mr. Donelson's liabilities and assets, as filed in the clerk's office a few days ago, shows the former to be $13,093, and the latter 2,863. The courts will endeavor to straighten out the various complications in the case.

Still another law suit involving jewelers is brought by the William Rogers Manufacturing Co., of Hartford, Conn., against Alexander Sholl, on account of silverware bought by Byrne, McKinnon & Co., of this city, upon his representation to the Rogers Co., that the firm was perfectly solvent with property to the value of $6,000, whereas they were insolvent. The Connecticut firm asserts this was done to defraud and bring action against Sholl for the price of the silver.

Small robberies at stores seem to be frequent. Two men walked into H. J. Hanson's jewelry store on Seventh street, St. Paul, the other day, and while the clerk's attention was distracted, calmly walked off with four watches. They were soon after overhauled, however.

E L. Austin, a Minneapolis switchman, has constructed a remarkable clock. He improvised a scroll saw from an old sewing machine, and did most of the work with that. The clock is in the shape of a locomotive, with the dial in the side of the cab. The engine is 26 inches long, of wood and brass. The wood-work in walnut, Spanish cedar and red amaranth, is beautifully inlaid.

The night of June 20th, another lot of jewelry was found under a lumber pile at La Crosse, Wis., part of that stolen from the traveling man for B. F. Norris, Alister & Co., Chicago, at Waverly, Ia. A large satchel containing fifty-nine watches and fifty-eight chains, besides all sorts of jewelry, was found and turned over to the police. The man who brought it here has never been apprehended, but Michæl Haley, of this city, is now on trial at Waverly for participation in the crime.

Hilborn & Staples is the firm which has just opened a jewelry and music store at Little Falls, Minn.

J. F. Matthews has opened a jewelry and watchmaker's store at Lidgerwood, S. D.

Henderson.

The Sapphires of Kashmir.

MANY persons, will remember the discovery of a sapphire mine in Kashmir about nine years ago, and the absurdly low prices at which the hillmen who first brought the gems to Simla were willing to sell the precious stones. The Maharaja of Kashmir was not long in placing a guard over the mines and raising a profitable revenue from them, and since then the work of collecting the stones has gone on from year to year. The largest stone found in 1887 weighed about six ounces, and was partly of a very brilliant color. In 1888 the largest stone only weighed 104 grains, and very few were found weighing more than fifty grains. These, however, are not to be compared with the stones brought down when the mine was first discovered. There are at present in the Treasury at Jammu some of the first stones discovered, measuring five inches in length by three inches in breadth, and though none of them are uniformly colored, but are shaded off into white at the ends, some fine gems might be cut from them.



A Complete History of Watch and Clock Making in America.*

[By Chas. S. Crossman.]

Number Forty-five.

Continued from page 79, July, 1890.

CLOCK MAKING:

Nathan Adams, Boston, was born in Norwich, Conn., in 1775. He served his apprenticeship in Providence R. I., went to Boston in 1796, where he made clocks and finished watches for thirty years or more. He was at one time the keeper of the city clocks.

Josiah Wood was born in 1774, at Dartmouth. He went to New Bedford at twenty-three years of age, in 1797, and learned clockmaking. He was also a silversmith. He made but few clocks, and soon gave up clock-making, and later engaged in the dry goods business in New Bedford.

David Studley was born in Hanover, Plymouth Co., March 31st, 1783. He learned clockmaking of John Baily, commencing in 1800 and finishing in 1806, when he commenced on his own account in his native town of Hanover, and pursued the business of clockmaking nearly forty years. He then retired to the small farm on which he was born for the remainder of his life. He died October 31st, 1873, aged ninety years.

Allan Kelly, of Sandwich, was another apprentice of John Baily, of Hanover, and started business in Sandwich in 1810, and afterwards moved successively to South Yarmouth, Providencetown, Falmouth and New Bedford, where he remained until his death.

Isaac Rogers commenced business in Marshfield, Mass., in 1800, and continued to make two or more clocks each year for twenty-five or thirty years. He made a good clock of the usual style. With whom he served his apprenticeship we are unable to tell, but incline to the opinion that it was with John Baily. He was more noted as a violin player than a clockmaker.

Sawen & Dyer made hanging clocks after 1800, first in New Quincy Market, and later in Cornhill, Boston.

Thomas Newell, of Sheffield, made a few astronomical clocks early in the present century.

James Fales, of New Bedford, made a few Williard time-pieces between 1810 and 1820. G. S. Fales, the son and successor of James Fales, made a few Willard time-pieces in 1827 and 1828. He has a regulator which his father made in the early part of his apprenticeship, at sixteen, and is still in use. James Fales made many ingenious and mechanical devices besides clocks, which lack of space forbids us to speak of.

Jonah Edson was born in 1792, in the West Parish of Bridgewater, now called West Bridgewater He learned his trade of Ezra Whitman in East Bridgewater. His apprenticeship ended in 1812, and he was then engaged in the war, serving at Dorchester, near Boston. He returned to Bridgewater in 1815, and manufactured high-case clocks until the Connecticut clocks were put on the market. Some of his clocks now in existence show that he was a good mechanic. They had calendars and moon attachments He had a furnace in his shop, and did his own casting, making two and three at a time. After giving up the manufacture of clocks, he continued to repair clocks and watches for a time, but his knowledge of casting led him afterwards to establish a brass foundry, which he carried on the remainder of his life. He died in 1874, eighty-two years of age.

John and Abel Stowell were brothers. The clockmaking business was established by John in Medford, in 1815, and removed to Charlestown now a part of Boston, in 1825, and carried on by him until his death in 1836, when his younger brother Abel took it and continued it until he also died, twenty years later. Abel was more aggressive than John in the way of businees. He made several Turret clocks as the demand for high case clocks and time pieces was constantly growing less. One of his clocks is now in the Boston and Fitchburg R R. depot at Boston.

William A. Wall and John C. Alny, New Bedford, Mass. Mr. Wall was born in New Bedford in 1801. He was another apprentice of John Baily, of Hanover, and commenced to learn his trade in 1816. He returned to New Bedford in 1820 and formed a partnership with John C. Alny, who was a watch repairer. They made clocks until they dissolved in 1823. Mr. Alny retained the repair business while Mr. Wall took the clock business until 1826, when he commenced to study art, and has since followed that profession in New Bedford.

Steven Taber was another New Bedford clock maker, although he never had a shop. He boarded in families and made them clocks but he gave up this business about 1815 having followed it only a few years.

Ezra Kelley of New Bedford, Mass., was born in Dennis, Cape Cod, Mass., in 1793. He worked on a farm until 1816, when he commenced his apprenticeship with his cousin Allan Kelley of So. Yarmouth. He worked there one and one half years and then finished his trade with John Baily, Sr., of Hanover. He afterwards settled in Dartmouth for seven years and was in partnership a short time with Nathaniel Sheppard. He then went to New Bedford, engaged a window and continued to make a few clocks and do watch repairing until 1845, when he commenced the manufacture of watch oil for the use of watchmakers, from oil taken from the porpoise. We do not here need to speak of him in this connection. His name is a household word among watchmakers in this and many other parts of the world. As a clockmaker, he made in all about fifty clocks.

Nathaniel Sheppard was also an apprentice of John Baily, Sr. He settled in Dartmouth, being a native of that locality and made a few clocks. He was associated with Ezra Kelley for a short time, the firm name being Kelley & Sheppard. They subsequently separated, Mr. Kelly going to New Bedford. Mr. Sheppard kept a repair shop until 1873, when his health failed and he died in 1881, at an advanced age.

William Cummings, was a clock maker in Roxbury, Mass., from 1820 to 1830. His residence and place of business were in Short street, now a part of Winslow street.

There were numerous other clock makers in Massachusetts, but the space allotted for this State is now more than filled, and all we can do here is to mention names and locations of some of them. David K. Atkin, of Acton; Philip Bennett, of Fall River; ——— Bellows, of Worcester; William Currier, of Salem; William Crane, of Canton; James Donall, of Charlestown; John Gooding, of Plymouth; Zacheus Gates, of Charlestown; ——— Holbrook, of Medway, who was quite a famous maker of turret clocks; Daniel Haynes, of Worthboro; ——— Hatch of Attleboro; Thaxter Higman, of Newburyport; ——— Lamson, of Salem; ——— Milliken, of Concord; Obed Robinson, of Attleboro; Marshall Sherman, who was an apprentice of Joshua Wilder, and was many years at Andover; John Sutlee, of Farmington; Nathan Taber, of Roxbury; ——— Tefft, of Attleboro; Elijah Whiton, of Groton, who was also a surveyor and a maker of surveyors' instruments; ——— Warren, of Plymouth, and A. C. Adams, William Cummings, Thomas Pons and George Savage, of Boston.

Coming down into Rhode Island we find several famous clock makers, but we can give them but passing notice.

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Benjamin Dudley, of Newport, was one of the early makers there. In 1873 he made the clock in the old state house. David Williams, also of Newport, was a high case cloakmaker of some distinction. After giving up clockmaking he went into the retail business and was moderately successful. He was a thorough Quaker. He died in 1845. Walter Cornell and Daniel Cummings were also clockmakers in Newport. Nicholas Geoffroy came to Newport from France, and was quite a successful clock maker in high grades of clocks early in this century.

Job Wilbur was born in Little Compton, and came to Newport in 1815 to commence his apprenticeship with David Williams. and afterwards became Mr. Williams son-in-law. He was very fond of hunting and out door sports, and was quite successful in his clock making business, which he gave up, however, many years previous to his death in 1873.

David Brown, father of Joseph Brown, of the Brown & Sharp Mfg. Co., was a clock maker in Providence. He was born in Attleboro, Mass., in 1781, and commenced clock making in Warren, R. I., where he carried on the business for a number of years, until 1834, when he removed to Providence, after which he made but few clocks. Both his son, Joseph Brown and Mr. Sharpe, were apprentices of David Brown, but did not continue in that line of business. About the last clock that David Brown made was put up in the State House in Newport in 1850 His particular specialty in turret clocks was tumbling pallets. One of his clocks that has pallets of this description is now in the steeple of a church in New Bedford was examined by the writer. It is a curiosity worth climbing up the old dusty stairs to examine, but one which baffles an intelligible description.

Capt. Willard, of Warwick, so called because he was a captain in the Revolution made a few clocks between 1790 and 1810. Richard Howland was a small maker at Wickford.

Walter H. Durfee has attained quite a reputation in Providence during the last few years for his high case clocks put up after the old style. He imports fine English movements and cases them himself, thus reproducing many of the old style fine English clocks with really good movements.

Passing down into Connecticut, we find first at New Haven, James Joslyn, who was one of those Colonial clock makers whom we suppose could be classed under head of veritable geniuses. He was born in East Haven, and when a mere boy began whittling with a view of making a clock. He never served an apprenticeship at the business, but had a happy faculty of imitating what he saw. He commenced clock making in New Haven about 1798, locating at the corner of State and Worcester streets. We gathered most of our information from Charles O'Neil, for many years a jeweler on Broadway, New Haven, who left Mr. Joslyn in 1814 to commence business for himself. The last work which Mr. O'Neil was engaged on while in his employ was in helping Mr. Joslyn to make and put up a clock in the Old College Chapel, for which $850 was paid. It was considered a very fine clock. It remained in use until 1878. Mr. Josylyn used English castings and forgings, except during the period of the Embargo Act of the war of 1812, at which time he had his castings made in New Haven. He imported from England a fine wheel cutting machine, which probably at the time was the best machine for that purpose that had been imported. He made Willard time pieces altogether after 1815, and discontinued clock making about 1820. He was a true type of the New England Puritan.

John Douglass needs a passing word under the head of New England clock makers, although he was not strictly such. He was a cabinet maker by trade, but undertook to make clocks as well. He made one tower clock, which was a copy of Joslyn's, and was placed in the old Chapel street depot, now the market.

Isaac Doolittle, also of New Haven, located on Chapel street, soon after the Revolution, and made the usual style of hall clocks. He retired from business about 1810.

Asa Baldwin was located at Fair Haven. He never served a regular apprenticeship, and did not style himself a regular clock maker. He made a tower clock which was placed in the Centre Street Church, the drawings for which were made by a Mr. Olmstead, of New Haven, who made a few clocks in that city shortly after 1800. A Mr. Hemmingway and a Mr. Merriam also did some thing in this line about the same time.

David Elsworth, Windsor, Conn., was a clock maker, and a brother of the chief justice. He was not an extensive maker of clocks, as he gave considerable attention to gun work in which he became quite celebrated during the Revolution. David Picket, at Haydens in the same town, was a Revolutionary soldier, a clock maker and a hotel keeper. His greatest success was as a boniface. Martin Moses, was at Pine Meadow, now Windsor Locks, after 1790.

Daniel Burnap was at East Hartford, and attained something more than a local reputation. Contemporaneous with him, Mr. Cherry was making clocks at the same place. His descendants are well known in the silk manufacturing business at South Manchester. Ezra Whitman was also a small maker at East Bridgewater.

(*To be continued.*)

Unduly Large Balance Spring.

VARIOUS faults are caused by the watch having too large a balance spring, and especially if it comes too near to the center wheel. When the flat spring impinges on or strikes against the center wheel, and if the former is concentric, then it is too large for the watch. If the repairer applies the gauge, he will find that it exceeds the proportion to the balance, which should under ordinary circumstances be as 1 to 2. Should this proportion be right, however, the cause of the defect may also be due to an unsuitable arrangement of the single parts. In most cases a remedy can be effected by laying the spring deeper, in such a manner that it moves with just enough of space, but perfectly free in a plane with the balance. This will ofttimes be successful, especially when the center wheel has been moved upward as much as possible, and, in case it was full heavy, has been reduced by filing underneath as much as is consistent with its strength. It is thus possible to bring the balance spring underneath the center wheel.

Not quite as often, when repairing a cylinder wheel, will it be possible to bring the balance spring above the center wheel, and the repairer had better put in a smaller spring at once, before he wastes time by trying to remedy the fault. A spring with nine coils and suitable thickness of coil, would doubtless be sufficient.

Repairers will have noticed in detached lever watches with a very large Breguet or overcoil spring, that this is apt to jump on the center wheel, in consequence of very heavy jars; at other times it will jump on the regulator, to which it remains hanging with a few coils. These occurrences are of so peculiar a nature that the repairer feels sorely tempted to tell the customer that he has been digging in the watch with a pin (the customary auxiliary of the layman) or some other pointed article. Only after receiving the most solemn assurances of a trustworthy customer that such was not the case, I began to inspect the occurrence closer, and found that the balance spring was very large; it worked perfectly free and flat in the sufficient space allotted to it, but on account of its size it would, in the wearing of the watch, jump on the center wheel—a condition not to be produced by shaking, hitting with the hand, or the like. In order to correct this defect, I drilled a large headed screw near the balance into the plate, similar to a dial screw; then drilled a hole into the head, higher than the plane of the balance spring, and into this hole I fastened a long brass pin, which reached with sufficient space above the plane of the spring, and being passed between the bent up coil, it projected above the balance rim. In this manner I succeeded in correcting this very rare, but nevertheless disagreeable occurrence, without mounting a new balance spring.—HERMANN HORRMANN, in *Deutsche Uhrmacher Zeitung*

The Device and Fastening of a Balance Spring.

[BY MORITZ GROSSMANN.]



UE REGARD must be shown in the choice of a balance spring, both as to its quality and capacity to compel the balance to perform a number of vibrations within a given length of time. The quality of the spring will, of course, be proportioned to that of the watch. Best results are generally obtained in watches of long vibrations, such as those pertaining to the attached escapements, with well-tempered springs, while verge and cylinder movements go very well with a soft one. Distinguishing marks of a good spring are: 1—Perfectly even coiling, that is, equal distances from one coil to the other. 2—Greatest possible elasticity; this quality is easily recognized by seizing the inner end of the spring and drawing it up, while retaining the lower end on the table. A good spring should permit itself to be drawn out twice its diameter and resume its previous position, without malformation. 3—Uniform thickness of coils throughout its length; a spring faulty in this particular moves irregularly, because the weaker coils move more than the stronger do. To judge a spring with regard to the duration of time in which it impels the balance and causes the several different vibrations, it is necessary to take into consideration other conditions not easily enumerated. The balance is controlled as well by the elastic power as by the diameter of the spring, also by its own weight; again, by the placement of the different proportions.

Timing would become a highly simple labor, if the weight or magnitude of a balance were its sole controlling condition; it would be only necessary to measure or weigh the balance, in order to obtain the right proportion of the spring required. But no such landmarks can be established; it is well-known that a balance may be constructed to make an even number of vibrations with the same spring that another one does with a diameter twice as large—provided the former is very heavy, and the latter very light Even if it were practical to ascertain the size and weight of a balance, and from the proportions found establish a formula for ascertaining the number of vibrations, it would after all be useless if the disposition of the different proportions be not at the same time uniform. For instance a balance with light arms and weighty rim would accomplish its vibrations in a time different to that of one of equal size, but in an inverse ratio, although the same spring could very well be used for both. It will be seen, therefore, that no reliable formula can be established from the size and weight of the balance, to be used as a guide in the choice of power for the impelling spring; on the other hand, little advantage would be gained by having such a guide, as long as their manufacturers follow the present irrational manner. If, for instance, they were to adopt fixed rules for observing an undeviating proportion between breadth and strength, more dependence could be placed upon the number with which the springs are marked to indicate their supposed strength, provided, however, that their elasticity were also uniform.

The reader will see from this summary that measurement and calculation leave us in the lurch for once; at most they barely offer us a point for a fulcrum, and then only under certain conditions and suppositions. The repairer whose work varies constantly, is compelled to look for auxiliaries that have been established and tested by practice.

If a spring is wanted for a given balance, begin first to count the wheel teeth and pinion leaves, commencing with the center wheel, or, with watches with seconds hands by counting the teeth from fourth and escape wheels forward (the escape wheel seldom varies from 15 teeth); also if the balance makes the usual number of 18,000 vibrations per hour. This is the case by an escape wheel of 15 teeth, and when the number of fourth wheel teeth is proportioned to the escape leaves as 10:1; when, therefore, by a six leave pinion the wheel has 60, by a 7 leaf pinion it has 70 teeth.

Upon this base you make your preliminary choice from the assortment of springs at your command; seize one by the outer coil, suspend the balance from the inner one, and notice how much this weight draws the inner coil from the flat form. An approximate judgment can only be formed by due experience. Besides this, this method of testing a spring is by no means reliable for judging of its power, because it is evident that the power of a spring is proportionate to the sum of its sections, that is, the product of its breadth and thickness. A very broad and thin spring may have the same product as a narrow and thick one; it will be found, however, on testing both in the above manner, that the results will be quite different. The broad but thin one will resist the suspended weight more than the narrow one, but will, when practically used to propel the balance, be found the weaker of the two. The repairer is compelled to experience daily, especially with the inferior kinds, that the Swiss springs often possess in stronger sizes a narrower face than weaker ones; and it stands to reason that the spring should of rights be tested in the same position which it occupies in the watch and not in one rectangular to it, as is the general custom. A special contrivance is necessary to do this, however. A satisfactory and approximate examination, if conducted with due attention, may be made in the following manner.

Having tested the spring first, to ascertain its qualities, satisfy yourself by a close examination, before expending any labor upon it, whether the chosen one will cause the balance to make the necessary number of vibrations without the necessity of materially altering it either way. It should be mentioned in this connection that it should not exceed two-thirds of the balance diameter. The distance is already indicated by the curb pins in movements with flat springs; for those furnished with the Breguet spring, with outer coil bent upward and having no such arrangement, it is advisable not to exceed the above specified limits.

The number of coils necessary for a good proportion in size cannot be fixed very easily, since those in the market are very different in the width of their coilings from one blade to the other and do not even possess a trace of uniformity of system. It may be stated, however, in a general way that the better qualities of Swiss springs are wound somewhat closer than is desirable, and it is necessary to give them, if the timer does not choose to have an extra small diameter, from 13 to 15 acting coils. A spring with a larger number of closely laid coils begins to assume the character of a body with a noticeable ponderance, whereby a new source of irregularity is introduced into the rate of the watch, in the different positions; it becomes a self-acting body, liable to be influenced by extraneous shocks, when worn.

Take the spring, which on a close investigation was found suitable, having a somewhat greater diameter than it is ultimately intended to have, place the collet upon the balance, and locate its inner incurved end into the collet hole. The inner coil is generally close enough to be forced upon the collet, thus being retained both by the end inserted within and by the clinging of the inner coil upon the circumference. This fastening is sufficient for the purpose of closer examination and reduction of the spring to its final dimensions. Next place the lower balance pivot upon a smooth surface, say a piece of glass, and draw it upward, catching hold at the outer end of the spring in such a manner that the balance can not fall sideways. Then cause it to vibrate and compare its motions with those of a clock of like calculation. It is preferable to place a going movement of the same number of vibrations into a small box

with a glass cover and set the balance with the spring under trial vertical to that of the known movement; little experience is necessary to detect the smallest deviation in the rates under comparison. Should the balance with the trial spring vibrate too quickly, take a weaker one; on the other hand, catch the spring a little further from the outer end and compare again; continue your experiments in this manner until a perfect uniformity of rate has been established. Should the active length of the coil become out of all proportions, take a weaker one. This method of testing is very simple, and with a little experience very reliable; the spring chosen and found suitable may then be fastened and placed in order, without entertaining any doubts that the labor might have been expended in vain.

Advice to Watchmakers' Apprentices.

BY A MAN WHO HAS SPENT TWENTY YEARS AT THE BENCH.

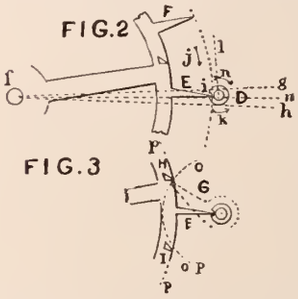
BEFORE taking up the theme of the duplex escapement, I would add a few words about fusee chains. The complaint of their running off the fusee and turning flat on the barrel is too common to need more than an explanation of the method of remedying these defects. The spiral of the fusee is protected on one side by a slight flange, which serves more as a guide to the chain than as an actual barrier to its going off. To restore this flange, the main wheel should be removed and the fusee cemented to a flat-faced cement chuck and a tool provided, shaped



in transverse section, as shown in Fig. 1. The tool *A* is lain on the *T* rest *B* of the lathe, and the point *a* placed in the groove of the fusee as shown in diagram *A** where the parallel dotted curved lines *b* represent the spiral of the fusee. The point of the tool is of the exact thickness of the groove, and the lower edge of the tool is given a slight angle to correspond to the line *c c* to produce a tendency in the chain to cling to the side step of the fusee. The lathe is worked back and forth only a little way by grasping the pulley of the spindle with the thumb and finger of the left hand, or through an arc of 25 or 30 degrees as shown at the dotted radial lines *d a*. Such a short arc enables one to guide the cutter *A* to take a continuous chip for this extent, whereas if we attempted to follow the spiral for the entire length we would fail. A chain can generally be made to stay upright by taking off the hooks and reversing them in reference to the ends of the chain, and also reversing them so as to bring the opposite edge of the chain to rest on the barrel. Uprighting the barrel may also have to be resorted to. Sometimes we can make a change by contracting the upper part of the barrel in one of "Clackner's barrel closers."

We will now take up the duplex escapement. This is really the simplest escapement made, as is evidenced in the Waterbury watch, and the only cause of wonder is how such a simple method of making a duplex escapement could have been so long overlooked. The active principles involved in a duplex escapement are two: first, a holding of the train by placing on the balance staff a small slotted roller on which rests the long slim pointed tooth; second, an impulse conveyed to the balance by an additional or supplementary tooth which engages an impulse pallet placed on the balance staff.

Let us analyze the action of the escape wheel tooth on the roller. In fine watches this (roller) is usually made of a cylindrical piece of ruby from $\frac{1}{50}$ to $\frac{1}{60}$ of an inch in diameter, and perhaps double these in length with a hole pierced in the direction of its axis. Parallel to the axis is also a slot which permits the tooth to enter and pass. The principle of action will be understood by inspecting Fig. 2; here the slim pointed tooth *E* engages the slotted roller *D*. The action of the escape wheel is in the direction of the arrow *j*. As shown in Fig. 2 the tooth *E* rests in slot *i*, and a slight movement of the roller *D* in the direction of the arrow *k* would disengage the tooth *E*, and then the tooth *F* of the escape wheel would move forward in the direction of the arrow *j* and strike the roller *D* about at the point indicated at the dotted line *l*. Now, of course, the tooth *F* could not pass the roller *D* except on two conditions; first, by the roller *D* making an entire revolution in the direction of the arrow *k*, when the same action would be repeated as took place when *E* passed the roller *D*. This continuous discharge of a duplex escape wheel takes place when we remove the hair-spring and allow the balance to turn in the direction of the arrow *j*; but when there is a balance-spring mounted on the staff which carries the roller *D*, it is required that *D* should make a reverse movement. Now let us investigate the action, under the imposed conditions. As soon as the roller turns in the direction of the arrow *n*, the tooth *E* or *F* falls



first into the slot *i*, but the momentum of the balance causes the tooth to retrograde until it rests on the smooth cylindrical surface of the roller. This movement is represented by the angular space between the lines *g m* Fig. 2. If we employ an escape wheel with 15 teeth the angular movement of said wheel will be 24 degrees for each tooth; now let us see what proportion of this can be utilized for imparting impulse to the balance.

At Fig. 3 the action of the impulse "finger," "hook," "impulse pallet," or "pallet," as it is called, is shown; the pallet being represented by the dotted lines at *G*. It will be readily seen that if the tooth *E* is disengaged from the notch *i* exactly as pallet *G* is inside of the action of the tooth *H*, it will attack the pallet *G* and give a momentum to the balance. The dotted circles *O P* represent the pitch line of the impulse tooth of the escape wheel and impulse pallet. In action the point of the tooth *E* is supposed to be released from the notch or slot *i* after the impulse pallet *G* has passed inside of the dotted circle *p p*. Here comes a point in which practice takes the lead of theory. Writers on this subject, generally practical men, direct that the impulse pallet should be securely inside the line *p* before the drop takes place.

As an experiment let any of my readers take the first duplex movement which comes to their hands, and first remove the hair-spring, and then set the impulse pallet so that the drop takes prematurely, that is so the impulse tooth *H*, Fig. 3, will actually clear the impulse pallet *G*. Now, as soon as the balance has acquired a rapid motion the impulse pallet will be inside of the arc of the impulse tooth in time to receive the impulse; because it takes an appreciable time for the train to move forward. The lesson is that if we set the impulse pallet the least inside of the arc *p*, when revolving the balance slowly, it will be found safe because the balance is moving at about its greatest velocity at the time the drop takes place.

There has been no end of wrangling about the proportions of the duplex escapement. I shall in my next communication give the proportions advocated and adopted by several of our most successful makers, and also give directions for drawing an escapement of this kind.

BRITTLE GOLD.—The goldsmith is often puzzled to soften gold so that it can be forged out thin without cracking or breaking. Some gold can be forged out easily while other varieties are very hard and brittle, because the impurities or alloys, such as a little lead or zinc, tend to make it so. Melting over a stone coal fire would do the same. Gold should be melted over charcoal or coke, and if of low grade, should not be exposed to the heat too long. If it has no "grain," melt again. If it does not take grain then melt again, and add a little saltpeter, and, a little later, some borax. For ordinary melting, fuse with borax, stir well and add a little sal-ammoniac just before pouring. In forging gold, it must be annealed as often as it begins to get hard and brittle. Low grade gold needs annealing oftener than finer gold. Heat red hot and cool without tempering.

TESTING CHRONOMETERS AT THE U. S. NAVAL OBSERVATORY.*

By Lieut Hiero Taylor, U. S. Navy,

(in charge of the government time service.)

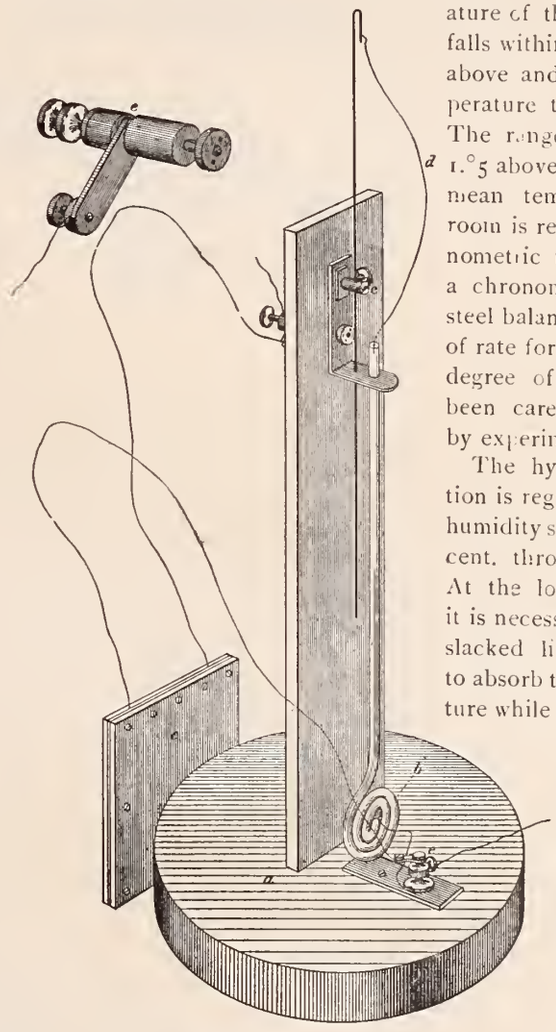


THE U. S. Naval Observatory, at Washington, D. C., is the depot for chronomoters used in the navy. Repaired chronometers are sent to the observatory to be tested, and those instruments whose performance is satisfactory, are held ready for issue to ships as they are needed, while those performing unsatisfactorily are returned to the makers for further repairs. Competitive tests of new chronometers were inaugurated a few years ago, and are held when the Government desires to purchase chronometers. Only those of American manufacture are allowed to compete, the Government buying the best and paying from $225 to $350 apiece for them, the amount paid for a chronometer being determined by its performance during the test.

It has been found that the variations of chronometers' rates are due mainly to changes of temperature. The condition of the atmosphere with reference to humidity may influence the rates, but careful experiments have failed to develop any law for variations in this case. There is no certainty as to how any particular chronometer will be affected from a change of humidity; of two chronometers one may gain and the other lose, but in any event the change of rate from this cause will be very small. With reference to temperature, however, it is different. It has been found from a careful consideration of the temperature records sent in by our ships from all parts of the world, that the average temperature of chronometers has been a fraction over 69° Fah. In consequence, chronometer makers try to compensate their chronometers so that they shall have their greatest gaining rate at or near 69° Fah. The temperature at which the chronometer has its greatest gaining rate is called the temperature of compensation. The makers also endeavor, with varying success, to adjust their chronometer so that its rates will change but little as the temperature, rising or falling, changes from the temperature of compensation. The tests at the Observatory show how they have succeeded in their efforts to attain these two objects.

The first part of the test is made at fixed temperatures in the temperature room, which has been especially fitted up for that purpose. The room is but little exposed to the sun, and is constructed after the manner of refrigerators, having treble floors, walls and ceilings, with intervening spaces. The outer space is filled with a material that is a non-conductor of heat, and the inner one is left as an air space. Above the room is a large ice chamber so arranged that warm air rising from the room and passing through the chamber is cooled and returns to the lower part of the room. The rapidity of this circulation through the room and ice chamber is regulated by changing the size of the opening between them. The room is heated by the circulation of hot water through pipes on three of its sides. The water is heated outside the room by a gas stove, whose supply of gas is controlled by a thermostat in the room.

The thermostat is a glass tube—similar to a thermometer tube, but larger—with a very large bulb so that a small variation in the temperature causes a comparatively large rise or fall of the mercury in the tube. The instrument is in the circuit of a single cell battery, the current flowing through the mercury. The lower connection with the mercury is by a wire fused into the bulb; and the upper through a second wire inserted into the upper end of the tube which, unlike the thermometer, is open. By entering or withdrawing the upper wire the temperature of the room may be changed. In practice the end of the wire is placed at the mark on the tube which indicates the temperature desired. If the temperature of the room rises above this point the mercury comes into contact with the wire and the circuit is closed, closing in turn a second circuit—eight cells—whose current flows through the coils of an electro-magnet and draws down its armature, which being attached to the lever of the gas valve thus shuts off the flow of gas to the stove until the temperature has fallen enough to allow the mercury in the thermostat to separate from the wire. Then, of course, the two circuits are opened and the lever of the gas valve being released is forced back by a spring; the gas once more flows to the stove where it is ignited by a small jet which burns constantly. In this manner the temperature of the room rises and falls within very small limits above and below the temperature to be maintained. The range is from 0.°5 to 1.°5 above and below. The mean temperature of the room is recorded by a chronometric thermometer, *i. e.*, a chronometer with a plain steel balance, whose change of rate for a change of one degree of temperature has been carefully determined by experiment.



THERMOSTAT AND CONDENSER.

The hygrometric condition is regulated so that the humidity shall be near 70 per cent. throughout the trial. At the lower temperatures it is necessary to place unslacked lime in the room to absorb the excess of moisture while at the higher temperatures a deficiency of moisture is avoided by placing in the room pans of water and dampened cloths. Great care is used to prevent any sudden entrance of outside air. The small window is quadruple and the door double so that in entering, the outer door may be opened and closed before the inner one is opened. Any sudden change in the hygrometric condition is shown by a hair hygrometer; the mean condition is obtained from frequent readings of wet and dry bulb thermometers.

When chronometers are to be tested the room is made ready for them, and they are placed on a table in the center of the room in company with the thermometers and thermostat. They remain in their boxes, but the lids of the latter are removed. The temperature of the room is brought to 45° Fah., and is kept at that degree for one week. Then the temperature is raised, degree by

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constant, and the rate at 80° will be — 0.01 sec., instead of — 0.16 sec. The mission of the curve does not end with its service at sea. During the cruise the navigator plots the rates he has determined from time to time upon it, and when the chronometer is returned it is sent with its curve to the maker for repairs. Thus the makers have before them a graphic history of the performance of the chronometer since it left their hands three or four years before. The information thus laid before them aids them in determining what is needed to improve the chronometer.

It is scarcely necessary to speak of the care and patience required to successfully carry out the tests above enumerated, nor of the great amount of labor involved in deriving from them the final results. In this connection it may not be out of place to say that the Observatory is under many obligations to Messrs. T. S. & J. D. Negus, John Bliss & Co, and Wm. Bond & Son., for their hearty coöperation in this work.

In conclusion it may be said that the system developed at the observatory has proved so satisfactory to the Government that it is not likely to buy any chronometers without a competitive trial, nor any but those of American manufacture, if for no other reason than that our leading makers are producing instruments equal to and even better than the best produced abroad.



[The Circular is not responsible for the opinions or statements of contributors, but is willing to accord space to all who desire to write on subjects of interest to the jewelry trade. All communications must be accompanied by a responsible name as a guarantee of good faith. No attention will be paid to anonymous letters. Correspondence solicited.]

San Francisco, Cal., June 12, 1890.

To the Editor of the Jewelers' Circular:

You kindly invite questions and I am a secker after knowledge respecting a beautiful little gold watch which I own. It is an O. F.' porcelain dial, cylinder escapement, nine holes, ruby jewels, key wind. The movement is of a dull colored metal very like, or can it be, real nickel metal? Buckhardt and Brandt, Chaux-de-Fonds, are the makers, and the movement is numbered 5396. The watch is exquisitely finished in all respects. Its remarkable feature lies in the fact that while the watch is 1¾ inches in diameter it is but ¼ inch in thickness. Now, when did B. and B. flourish as makers, and are such watches at all common? H. Molineux.

[The firm of Burkhardt & Brandt existed in Chaux-de-Fonds, Switzerland, from 1840 to 1848 or thereabouts. The firm was dissolved probably 40 years ago, and both partners are now dead. Watches like the one described were made regularly in moderate quantity between 1841 and 1847. Mr. Burkhardt, of the firm of B. & B., before going into business on his own account, had been bookkeeper for the firm of Julien Gallet, the predecessor of the present house of Julien Gallet & Co.—Ed.]

Middletown, Ohio, June 26, 1890.

To the Editor of the Jewelers' Circular:

Would you be kind enough to find out for me who are the New York agents for the Swiss watch movement named, "A. Leonville, Locle," also for the Patek, Phillipe & Co., Geneva, movement?

J. H.

[Mathey Bros., Mathez & Co., 16 Maiden Lane, New York, are sole agents for the A. Leonville movement. Regarding the Patek, Phillipe & Co. watch, each large town of the United States has its own agent who distributes the watches to local dealers. You may obtain the watch from D. Valentine, 3 Maiden Lane, New York, or from the factory direct.—Ed.]

Compliments of the Month.

San Francisco, Cal., June 24th, 1890.

I cannot do without The Circular, for I find all the news in condensed form in it, and that is a great deal for a man who has very little time to spare for reading. Frank Gruner.

Morrill, Kan., June 17th, 1890.

I would not do without your paper as long as I can raise money to pay for it and as long as there is so much valuable information in it. W. Haldeman.

Chicago, Ill., June 30, 1890.

Dear Circular people—I miss The Circular. It has not come for June. I am hungry to see it, and get the new trade points.

O. G. Bryant.

Belding, Mich., July 16, 1890.

I like your Circular very much. C. E. Brown.

Cleveland, Tenn., July 15, 1890.

I think it one of the best books for watchmakers and jewelers published. W. O. Horner.

St. Louis, Mo., July 6, 1890.

Should my subscription expire at any time please notify me and I shall send subscription at once, as we feel lost without The Circular. F. H. Niehaus.

Ogdensburg, N. Y., July 14, 1890.

We are anxious to have the paper right along. Bell Bros.

Clinton, Iowa, July 14, 1890.

Please send us for one year your valuable Circular.

Brumer Bros.

Tacoma, Wash., July 12, 1890.

Please do not let me miss a number and on no account stop it. I would not be without it. A. H. Grenell.

Speicher, Switzerland, June 26, 1890.

I cannot afford to lose any numbers of your valuable paper, and request you to be good enough to send it regularly.

I. Zuberbuhler.

Adrian, Mich., July 15, 1890.

I enclose $2.00 to renew my subscription and think it is well invested. Wm. M. Sheldon.

FINALLY CAUGHT ON.

[*Chicago Tribune.*]

New Salesman—What are you all laughing at? I don't see anything funny in that story.

Old Salesman (in a whisper)—It's old Spotcash, the proprietor, that's telling it.

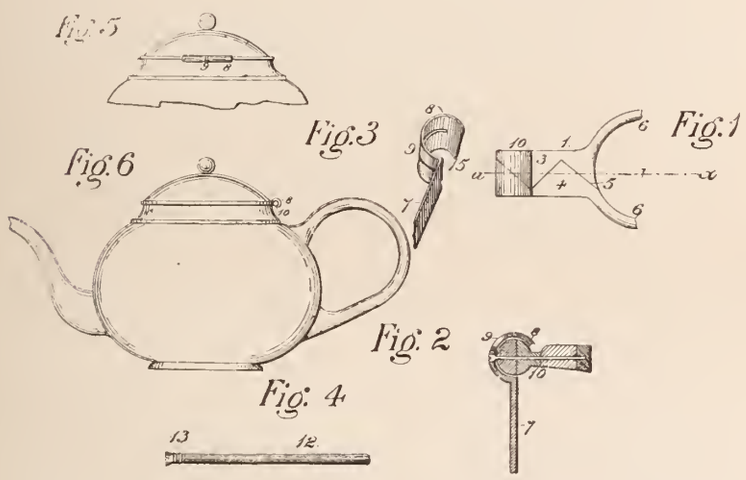
New Salesman (loudly)—Ha, ha, ha!



PRICE'S SPECTACLE AND SILVERWARE JOINT.

THE diagrams below illustrate the principle and uses of a recently patented spectacle and silverware joint, the invention of B I. Price, of Denver, Colo. The advantages of this new joint are claimed to be numerous, many of them being apparent to almost every jeweler at the first glance.

First, as a spectacle joint, its superiority resides in the fact that it consists of but three parts, exclusive of the pin, each acting upon correct, scientific and mechanical principles, and operating with perfect simplicity and mathematical accuracy. The temple is made in one piece, and should it become loose, it requires only a slight change in the form of the circle to restore it to the same tension as when new. Every jeweler or optician who has sold spectacles, especially gold ones, knows the frequency and the annoyance of rivets becoming loose. The simple insertion of the pin in the Price joint is said to obviate this difficulty, saving much time, trouble and expense; besides there is no danger of the pin twisting or making a misfit during soldering or repairing, as it can be pinned together while doing so. One of the strongest advantages, however, in this



new patent joint for spectacles is that the lenses are not subject to flaking or breaking, as the strain is on a direct line and bears entirely upon the neck of the joint and not upon the lens.

By reference to figs. 1 and 3, it will be seen that the invention combines simplicity with strength and freedom of action. The part shown in fig. 3 is considerably more than a half circle in form, and when slipped on endwise over the cylinder or head, as shown in fig. 1, it not only fits perfectly, but is kept in position by its own shape, the sole use of the pin being to prevent its slipping off at either end. The long slot in this part allows it to work with perfect freedom over the pin (fig. 4), which is held firmly in place by means of the thread-like notches near its head. These principles, of course, apply to the use of the joint in silverware as for spectacles.

The joint used for silverware (figs. 5 and 6), has the same action as when used for spectacles, and for this purpose possesses a two-fold advantage. First, it requires less time to make and fit it, and the old points or guards to prevent the lid of a teapot for instance, from striking on the handle are done away with, as the lid strikes on the neck of the joint; the lid is thus permitted to be opened and closed with greater ease, and without injury to either lid or handle. Besides, the joint has a smooth, even surface, and the lid can easily be removed and the article thoroughly cleaned. The device has no sectional parts, and, when used as a joint for silverware, leaves no strain on the lid

NON-SEPARABLE EXTENSIBLE LEVER BUTTON.

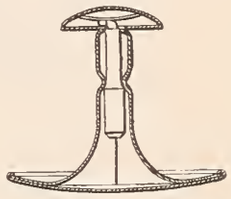
The invention illustrated below relates to certain improvements in buttons such as are adapted to be inserted in a button hole and removed from a number of thicknesses of fabric, and will confine the goods closely on each side. In the accompanying drawings, Fig. 1, is a side elevation of a button constructed in accordance with this invention. Fig. 2 is a sectional view of the same. Fig. 3 is a view of an ordinary hinged shoe-button, illustrating the necessity for providing a long shank. Fig. 4 is view of the button under discussion with the shank extended.

The essential feature of the invention consists in making the shank extensible or capable of being elongated, so as to permit more thicknesses of fabric to be held thereby, or to enable the button to be made

FIG. 1.



FIG. 2.



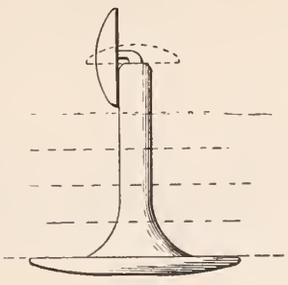


FIG. 3.

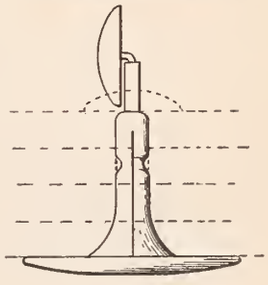


FIG. 4.

thinner—*i.e.*, with the top and bottom closer together than ordinarily, and at the same time permit the same to be passed easily through the button-holes.

The invention being especially adapted for application to buttons having a hinge or pivoted shoe which tilts into the plane of the shank in order to pass readily through the button-hole. Thus it will be seen that by mounting the shoe on the stem and drawing the same out before inserting or removing the button from the button-hole the shank proper may be made very much shorter than in the ordinary button, and the two parts of the button caused to clamp the fabric more tightly and also present a more neat and finished appearance. The result is clearly illustrated in Figs. 3 and 4. This button is the invention of D. D. Mumma, of Harrisburg, Pa.

ANTI-FRICTION BEARING FOR LATHE SPINDLES.

ONE of the most important improvements in lathes ever made, has recently been perfected by John Stark, the well-known lathe maker of Waltham, Mass. It is an anti-friction adjustable bearing for lathe spindles.

The object of the invention is to prevent the heating of the lathe spindle and its front bearing, and to relieve the end-pressure on the latter when the lathe spindle is used for drilling purposes, which is accomplished by means of an anti-friction adjustable collar secured to the lathe-spindle between its bearings and adapted to lie in contact with the front end of the rear bearing of the head-stock as long as the lathe is used for drilling purposes. Thus the longitudinal pressure is transferred on the lathe-spindle directly to the flat surface of the rear bearing.

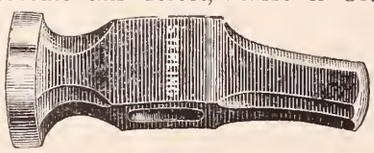
In combination with the head-stock of a lathe and its spindle is an adjustible anti-friction collar secured to the lathe-spindle and having anti-friction balls or rollers located between grooved plates, one of which is connected to the lathe-spindle and the other loose thereon. The adjustible anti-friction collar consists of an externally screw thread sleeve, secured to the spindle by a nut with longitudi-

nally adjustable shell, and two anti-friction plates, with their balls or rollers.

A screw-threaded sleeve is splined to one of the grooved plates. By means of this improvement a belt will do five times as much work as it will with a check bearing. It is especially useful in machinists' bench lathes.

"STERLING" CHASING HAMMER.

While the ordinary Stub's chasing hammer has been in use for many years, and, for want of a better tool, has been fairly successful, chasers have experienced considerable trouble with it by reason of the chipping away of its face which is of steel, while its body is of iron. To overcome this defect, Frasse & Co., 92 Park Row,



New York, have perfected a hammer, illustrated here, which they have christened "Sterling" chasing hammer. It is made entirely of steel, in any weight from 1 to 8 ounces, and with either round, flat or extra wide faces. It is handsomer than the old style, and in price is the same. It has been thoroughly tested and has been acknowledged to be eminently satisfactory.

RECENT PATENTS.

The following list of patents is compiled from the records of the United States Patent Office, and specially reported to THE JEWELERS' CIRCULAR.

Issue of July 1, 1890.

DESIGN PATENTS NOS. 19,954 to 19,964, inclusive.—CANE OR UMBRELLA Handle.—Henry O. Schmidt, New York, N. Y., assignor to Simons, Brother & Co., Philadelphia, Pa. Application filed April 15, 1890. Serial Nos. 348,098, 348,099, 348,103, 348,111, 348,113, 348,114, 348,118, 348,120, 348,121, 348,124, and 348,112. Term of patent 3½ years.

DESIGN PATENTS NOS. 19,965 to 19,972, inclusive.—CANE OR UMBRELLA Handle.—Henry A. Weihman, Philadelphia, Pa., assignor to Simons, Bro. & Co., same place. Applications filed April 15, 1890. Serial Nos. 348,095, 348,094, 348,089, 348,084, 348,087, 348,080, 348,096 and 348,091. Term of patents 3½ years.

DESIGN PATENT NOS. 19,982 TO 19,987 INCLUSIVE.—CANE OR UMBRELLA Handle.—Henry O. Schmidt, New York, N. Y., assignor to Simons, Bro. Co., Philadelphia, Pa. Applications filed April 15, 1890. Serial Nos. 348,119, 348,108, 348,115, 348,110, 348,107, and 348,109. Term of patents 3½ years.

DESIGN PATENTS NOS. 19,988 TO 19,995 INCLUSIVE.—CANE OR UMBRELLA Handle.—Henry A. Weihman, Philadelphia, Pa., assignor to Simons, Bro. & Co., same place. Applications filed April 15, 1890. Serial Nos. 348,082, 348,083, 348,085, 348,081, 348,086, 348,093, 348,092 and 348,088. Term of patents 3½ years.

DESIGN PATENT NO. 19,998.—CANE OR UMBRELLA HANDLE.—Henry Ot Schmidt, New York, N. Y., assignor to Simons Brother & Co., Philadelphia, Pa. Application filed April 15, 1890. Serial No. 348,123. Term of paten, 3½ years.

DESIGN PATENT NO. 20,001.—CANE OR UMBRELLA HANDLE.—Henry O. Schmidt, New York, N. Y., assignor to Simons, Brother & Co., Philadelphia, Pa. Application filed April 15, 1890. Serial No. 348,100. Term of patent 3½ years.

TRADE MARK PATENT NO. 18,101.—DOUBLE-STOCK SCREW-BEZEL WATCH-Cases.—American Waltham Watch Company, Waltham, Mass. Application filed April 16, 1890. Used since August 21, 1889.
"The word 'Century' arranged in a curved line."

431,282.—MOTION-CLOCK.—ALBERT PHELPS, ANSONIA, CONN. FILED NOV. 18, 1889. Serial No. 330,668. (No model.) In a motion-clock the combination, with a dial provided with two openings, of two parts located back of the dial and respectively arranged to be reciprocated through the openings therein, a horizontal shaft to which the parts are attached, a crank secured to the shaft, a pitman connected with the crank, and a crank having the upper end of the pitman connected with it and secured to the pallet-arbor of the clock-movement, whereby the oscillations of the arbor are transmitted to the parts which are caused to play back and forth through the openings in the dial.

431,286.—SOLAR ATTACHMENT FOR TRANSIT-INSTRUMENTS.—WALTER SCOTT, Hot Springs, S. D. Filed January 8, 1890. Serial No. 336,240. (No model.)

431,435.—MACHINE FOR FORMING NIBS ON WATCH PENDANTS.—CHARLES W. BUTTS, Sag Harbor, N. Y., assignor to the Fahys Watch Case Company, same place. Filed Apr. 14, 1890. Serial No. 347,792. (No model.) The nib-forming die having nib-shaped depressions or cavities with teats or projections in the bottom thereof.

Issue of July 8, 1890.

DESIGN PATENT NO. 18,163.—FORKS, SPOONS, LADLES AND OTHER FLAT-Metal Table Ware.—The Holmes & Edwards Silver Company, Bridgeport, Conn. Application filed April 10, 1890. Used since January 1, 1888.

431,595.—ALARM CLOCK. ALMERON M. LANE, MERIDEN, CONN. FILED March 18, 1890. Serial No. 344,313. (No Model). A combined clock and case, a base and an inverted bell centrally mounted over the base and between the base and case.

431,723.—WATCHMAN'S TIME-RECORDER. ALFRED DE MEURISSE, PHILADELPHIA, PA. Filed Sept. 5, 1889. Serial No. 323,084. (No model).

431,774.—METHOD OF FINISHING EMERY POLISHING WHEELS. FREDERICK Kohnle, Dayton, Ohio. Filed Nov. 11, 1889. Serial No. 329,883. (No model). This method of finishing emery-coated wheels, consists in applying a coating of glue and emery to the peripheral face of the wheel and in then revolving the wheel in contact with a heated cylinder.

431,804.—CHAIN. WILLIAM C. EDGE, NEWARK, N. J. FILED APR. 3, 1890, Serial No. 346,408. (No model). This chain consists of a series of tubes that are placed at right angles to each other, each tube having rigidly attached to it the caps that cover the ends of one of the adjoining tubes.

431,807.—DEVICE FOR MARKING WATCH-DIALS.—EDWARD J. GUILFORD, ROCKFORD, Ill. Filed Jan. 5, 1889. Serial No. 295,500. (No model.)

431,848.—PLATED METAL.—GEORGE U. MEYER, PROVIDENCE, R. I, FILED May 15. 1890. Serial No. 351,936. (No model.) The process of making ingots for jewelers' stock-plate, consists in securing a sheet of hard solder to the sheet of precious metal and to the block or sheet of inferior metal by a solder fusing or flowing at a lower temperature than the hard solder.

431,914.—SPOON.—ISAAC N. PLOTTS; PHILADELPHIA, PA. FILED DEC. 20. 1887. Serial No. 257,477. (No model.)

Issue of July 15, 1890.

DESIGN PATENTS NOS. 20,008 AND 20,009.—BROOCH.—EDWARD P. BEACH, Newark, N. J. Applications filed May 3, 1890. Serial Nos. 350,525 and 350,526. Term of patents 3½ years.

DESIGN PATENT NO. 20,010.—SCARF FASTENER.—HENRY BERLINER, NEW YORK, N. Y. Application filed May 31, 1890. Serial No. 353,859. Term of patent 3½ years.

DESIGN PATENTS NOS. 20,011 AND 20,012.—HANDLE FOR COMBS.—HENRY BERRY, Huntington, Conn., assignor to The Derby Silver Company, same place. Applications filed June 16, 1890. Serial Nos. 355,657 and 355,656. Term of patents 7 years.

DESIGN PATENTS NOS. 20,013 AND 20,014.—BACK FOR BRUSHES.—HENRY BERRY, Huntington, Conn., assignor to The Derby Silver Company, same place. Applications filed June 16, 1890. Serial Nos. 355,657 and 355,658. Term of patents 7 years.

DESIGN PATENT NO. 20,025.—JEWEL-SETTING. — NATHANIEL L. RIPLEY, Boston, Mass. Application filed May 8, 1890. Serial No. 351,086. Term of patent 3½ years.

DESIGN PATENT NO. 20,038.—BACK FOR BRUSHES.—STEPHEN C. HOWARD, Providence R. I. Application filed May 24, 1890. Serial No 353,098. Term of patent 14 years.

DESIGN PATENT NO. 20,040.—PEN-HOLDER.—GEORGE W. MABIE, BROOKLYN, N. Y. Application filed May 16, 1890. Serial No. 351,093. Term of patent 7 years.

TRADE MARK PATENT NO. 18,171.—WATCH INSULATORS.—METROPOLITAN Watch Company, New York, N. Y. Application filed April 24, 1890. Used since July 1, 1888. "The word 'AJAX.'"

TRADE MARK PATENT NO. 18,174.—WATCH-CASES.—ESSEX WATCH-CASE Company, Newark, N. J. Application filed May 12, 1890. Used since May, 1889. "The word 'DERBY.'"

TRADE MARK PATENT NO. 18,185.—WATCH-CASES.—ESSEX WATCH-CASE Company, Newark, N. J. Application filed May 12, 1890. Used since May, 1889. "The letters S. X."

432,007.—GEM-SETTING.—GYULO ARMENY, NEW YORK, N. Y. FILED OCT. 15, 1889. Serial No. 327,060. (No model.) A gem-setting the base and cramps of which are formed of gold and having small pieces of iridium secured wholly upon the tops of the cramps, so that they project over and upon the edges of the gem to hold it securely.

432,214.—EYE-GLASS CASE.—CHARLES F. PRENTICE, NEW YORK, N. Y. Filed Feb. 12, 1890. Serial No. 340,182. (Model.) A case for eyeglasses consisting of an elongated body, having flat sides, closed and rounded at one extremity and open and straight at its other extremity, and having a circular enlargement formed integral therewith in one side and midway of its extremities.

432,218.—BUTTON OR STUD.—FRANK E. WILLIAMS, NEW YORK, N. Y. Filed Feb. 15, 1890. Serial No. 340,598. (No model.) A shirt-stud composed of a head and fixed post, the latter having a shoulder and a curved locking-lever pivoted to its lower end, one end of the locking-lever being adapted to fold in line with a fixed post and flush with the shoulder thereof.

432,256.—INTERCHANGEABLE STEM-WINDING-WATCH MOVEMENT. — HENRY ABBOTT, Newark, N. J. Filed July 29, 1886. Renewed May 24, 1887. Serial No. 239,235. (No model.) In a stem-winding-watch movement, the combination of two sets of relatively-adjustable plates or frames, each set



Mosaic.—The manufacture of mosaic may be traced to Indian origin, and it was known in Rome before the days of the Republic. The art was much improved under the Empire, not merely by the introduction of marble of several colors, but by the invention of artificial stones called in Italian *emetti*, which may be made in every variety of tint. When the pictures were introduced into churches, they were made of mosaic, but the process was perfected during the last and the present centuries. The minute and numerous pieces of colored squares are placed upon a copper ground with a cement of gum mastic and other materials: they are then ground to a perfect level and polished. The Church of St. Lawrence, in Florence, contains the family tomb of the Medici, and is greatly admired by artists, on account of the precious marbles, jaspers, agates, malachites, etc., with which the walls are embellished as mosaics.

Singular Clock.—A native prince of Upper India is said to own and jealously guard, as a rare treasure, one of the most remarkable timepieces ever constructed. In front of the clock's dial is a gong, swung upon poles, and near it is a pile of artificial human bones. The pile is made up of the full number of parts, in twelve heaps, in seeming confusion. Whenever the hands of the clock indicate the hour of one, out from the pile crawl just the number of parts to form the body of one man, part joining itself to part with quick metallic click, and when completed, the figure springs up, strikes one blow that sends the sound pealing through every room and corridor of stately palace. This done, he returns to the pile and drops to pieces again. At two o'clock, two men arise and do likewise; and so on through all the hours, till at noon and midnight, the entire heap springs up and march to the gong, one after the other striking his blow, and then dropping to pieces.

Reviving an Old Dodge.—A foreign exchange tells of a lady who went to a jeweler to have a "diamond set" ring valued, and who drew a long face when informed that the ring was brass, with the slightest pretense of a gold film on it, while the "diamond" was glass, underlaid with tin foil. She would not at first disclose how she got possession of the ring, but her indignation finally got the upper hand, and she betrayed the secret. The trick played on her is an old one. A private residence is singled out. A cripple on crutches, hobbles up to the door, rings the bell and asks for the master or mistress of the house. When one of these appears, she exhibits the valuable "diming ring," she just picked out of the ash barrel standing in front of the house, and asks whether it belongs to any of the inmates. Of course it does; that careless chambermaid must have swept it off the table, and the "poor but honest" cripple is rewarded. The recompense ranges from 25 cents to $1.

What is the Meaning of the Word "Fire?"—This question, in the sense of the fire insurance business, was recently decided by the judge of appeals of the Fifth Chamber of the Paris Civil Tribunal. The Circular spoke of the case immediately after it happened, a little more than a year ago, but in order to refresh the memory of its readers, the following is a short synopsis of the case: The Countess Fitz James had all her household goods and chattels insured, in the sum of 585,000 francs, in the Union Fire Insurance Company, of Paris. At a proper clause in her policy were mentioned a pair of earrings, set with pearls, specially insured for 18,000 francs. When dressing, one evening, one of the earrings rolled from the mantelpiece into the fire and burned, although all possible endeavors were made to save it. Only the setting was recovered. The countess went to the insurance company and demanded the payment of the damage—8,940 francs, deducting 60 francs for the gold setting recovered. The company refused payment, because no actual fire or conflagration had occurred, and the earring had been destroyed by a fire serving simply for domestic purposes. The court refused to sustain this view, and sentenced the company to pay the damage, basing its opinion on the fact that "the article had been destroyed by fire, and that it had been insured against any damage whatever produced by any kind of flames or fire."

A Wooden Watch.—A St. Petersburg exchange lauds the ingenuity of a Russian wood carver, who has cut out a wooden watch. The entire mechanism is of birchwood, and considering the circumstances, the watch is said to keep fairly good time. The Circular, however, does not know which to pity most; the institutions of a country that cannot employ to better advantage the mental or physical ability of an able-bodied man or, the cravings of a talented mind seeking to produce something better than the mere humdrum of every day, and finally oozing away at a wretched imitation of something which even under the most favorable circumstances must be regarded with compassion. It belongs to the category designated by the boarder in the criticism of the butter at his boarding-house: "For butter, there is too much hair in it, and for a false switch, there is too much butter in it."

Malevolence of the Foreign Press.—That all the botches in the horological and every other art are to be found only in America, has long ago been a stereotype statement of the European technical press. To show how far it will go in its villification of our workmen, both native and foreign here in America, The Circular condenses an item from the *Deutsche Uhrmacher Zeitung*, for the amusement of its readers: "Skilled in soldering and cementing, was recently the heading of an advertisement published in an American horological journal by an American workman desiring a situation," etc. The item then recounts how one of its subscribers here in America, asked for specimens of the advertiser's skill in soldering, and received by return mail the veriest collection of botchwork, soldered and smeared over with tin; for instance, a cylinder with plugs soldered in a cylinder escape wheel, and other pieces. The article is exceedingly verbose, to show how incapable our workmen here are, etc. Without seeking to open a controversy, The Circular boldly advances the statement that as good a collection of workmen in any art or trade can be found in America, as in any part of the world.

In Union is Strength.—The syndicate of the Swiss watchcase manufacturers recently held a meeting in the "Bieler Hof," Biel, Switzerland. After due discussion, it was resolved unanimously, to strictly observe the several conditions of the agreement entered into with the journeymen casemakers' union. According to this agreement, members of the union can work only for those belonging to the syndicate, and on the other hand, the latter can only engage workmen belonging to the union. The wages tariff must be fixed both by masters and workmen conjointly; it must be of such a tenor that the Swiss watch manufacturer is able to resist the competition of French, English and American goods. The apprentice system also is to be revised, in order to raise capable workmen. All disputes to be settled by arbitration by a convention of both employers and employed. The mutuality has succeeded so far in preventing the falling of prices.

Cheap Swiss Watches.—On the subject of cheap Swiss watches, the Swiss consul at Barcelona, Spain, says: "It is apparently the intention of Swiss watch manufacturers to have the monopoly of the sale of watches in Spain. It is incredible that exactly, in the commerce of watches, Swiss manufacturers offer the greatest length of credits, and it looks as if watches cost nothing in Switzerland; three, four, six and even eight months credit is allowed to firms that could not obtain a credit for anything else. It is possible to buy a stock of watches cheaper in Spain than even in Switzerland."



Rare Brass Alloys.—*Bristol brass* (Prince metal), 6 parts copper, 2 zinc; *Japanese brass* (Sinchu), 10 parts copper, 6 zinc; *white brass*, 1 part copper, 8 zinc, 1 iron—very suitable for statue casts in place of bronze.

Malleable Bronze.—Dronier claims to have discovered a simple method to make bronze malleable; it consists in the addition of from ½ to 2 per cent. of mercury, and appears to act mechanically rather than chemically. It is added to one of the metals of which the alloy is made.

Bronzing Medals.—According to the *Revue Industrielle*, medals are bronzed in the Paris mint by boiling them in an untinned copper kettle in a fluid composed of 500 parts pulverized verdigris and 475 parts pulverized salammoniac, dissolved in 160 parts strong vinegar and 2,000 parts of water. The medals are kept apart by wood or glass.

Cleaning Rags.—These rags which are excellent for polishing metallic surfaces, are prepared in the following manner: Dip flannel rags into a solution of 20 parts dextrine and 30 parts oxalic acid in 20 parts logwood decoction; wring them gently and sift over them a mixture of finely powdered tripoli and pumice stone. The moist rags are piled one on another, with a layer of the powder between each two. They are then pressed, taken apart and dried.

Gold Varnish for Brass Objects.—The following formula is excellent for preparing a gold varnish for physical instruments, etc.: Gum shellac, in grains, pulverized, 90 parts; copal, 30 parts; dragon's blood, 1 part; red saunders wood, 1 part; pounded glass, 10 parts; strong alcohol, 600 parts. After sufficient maceration, filter. The powdered glass simply serves for accelerating the dissolving, by interposing between the particles of gum shellac and copal.

Soft Gold Solder.—Melt equal parts of 14-karat gold and silver solder, and hammer it into a thin sheet upon the anvil; cut into pellets. This solder will satisfy all the demands of the watch repairer. It is advisable to use silver solder for low grade, say 6 or 8-karat gold goods, which consists of 2 parts fine silver and 1 brass, with the addition of a little tin.

To Silver Glass.—Dissolve 3 grains of ammoniacal nitrate of silver in one ounce of distilled water, which solution must be rendered somewhat clouded by sufficient nitrate of silver, and then filtered. Immediately before use, mix 1 ounce of this solution with 2½ grains Rochelle salts. The glass to be silvered having been cleaned to its utmost, is placed in a suitable vessel, on the bottom of which are placed a few wax zones, thereby raising the glass about one inch above the bottom, after which the fluid is poured over it. The vessel is placed on the north side of the house, or in a place with deadened light, and the silver precipitate will be sufficiently thick in two hours. It is then taken out, washed and dried. If the glass with this silver pellide is to be used as a reflector or speculum, the coating is to be protected by varnish.

Renovator of Tarnished Gold Goods.—The following mixture is excellent for renovating tarnished goods: Bi-carbonate of soda, 2 ounces; chloride of lime, 1 ounce; common salt 1 ounce; water, 16 ounces. Mix well together and apply with a soft brush. A very small quantity of solution is sufficient for effecting the desired purpose, and it may be used either cold or in a lukewarm state. Plain articles may be brightened equal to new by putting a spot or two of the liquid upon them from the stopper of the bottle, and lightly brushing over the surface with fine tissue paper until sufficiently dried off to accomplish the objects desired.

To Copy Printing.—Printing can be copied on any paper of an absorbent nature, by moistening the surface of the latter with a weak solution of acetate of iron, and using an ordinary copying press. Old writing also can be copied upon unsized paper by moistening this with a solution of sulphate of iron, to which has been added a simple solution of syrup sugar.

To Clean Nickel.—The bluish or greenish oxidation forming on nickel, and especially that used for watches, can be entirely removed by plunging the piece for ten or fifteen seconds in a mixture of 50 parts rectified alcohol and one part, in volume, of sulphuric acid. Take it out, rinse in water, and then throw it for a moment in pure alcohol; dry with a fine cloth or sawdust.

Hardening in Petroleum.—Good results are obtained by hardening small steel articles in petroleum. For pinions, arbors, pallets, etc., take a glass, hard temper. Warm the article and rub it with soap, after which heat to a red (not white) heat, and at once throw into petroleum. An article hardened in this manner will not warp or twist out of shape; besides this, it remains white. Do not bring the oil near the fire, however.

Transparent Cement.—According to a French journal, a transparent cement can be prepared from the following formula: In a vial place 10 parts chloroform with 12½ parts non-vulcanized india rubber (in small pieces). The solution is readily effected; when ended, add 2½ parts gum mastic, and let the whole stand in cold for from eight to ten days. The cement is perfectly transparent and very sticky.

To Clean Silver.—Take either a small sponge, a piece of flannel, a piece of chamois, or a clean and dry silver brush. Rub all the articles which have bad spots, with salt, which removes the spots more quickly than anything else. The simplest method is to place a little prepared chalk in a saucer with water, of which make a thick paste, and add a few drops of ammonia. In place of ammonia, the chalk can be prepared with alcohol or simply with water. This paste is to be brushed or rubbed carefully over the article.

Alloy of Aluminium and Tin.—M. Bourbouze has compounded a very useful alloy of aluminium and tin, by fusing together 100 parts of the former with 10 parts of the latter. This alloy is paler than aluminium, and has a specific gravity of 2.85—that is, it is a little heavier than the pure metal, but not too heavy to be formed into parts of instruments intended to be very light. The alloy is not as easily attacked by the several reagents as aluminium is, and it can also be worked more readily. Another great advantage is that it can be soldered as easily as bronze, without further preliminary preparations.

To Make Chloride of Gold.—Take 5 pennyweights of fine gold, and after rolling out to a thin plate, cut it into small strips or pellets. Get an olive flask and clean it well with a warm and saturated solution of soda and water. Half fill the flask with water, and set on a sand bath over a heat that will slowly bring the water to boiling, which will both temper and test the flask; if it stands this test, it is fit to be used. Put the gold pellets into the flask, then mix in a small bottle half an ounce of pure nitric acid and two ounces of muriatic acid, and pour some of this into the flask to cover the pieces of gold; place it on a sand bath over a gentle heat, and put over the mouth of the flask a small piece of glass to prevent the solution from spurting out, while in action. As soon as the acid ceases to act on the gold, and if any remains undissolved, add a little of the mixed acid, and continue to add little at a time as often as it stops acting on the gold until all is dissolved; remove then the flask from the sand bath and let it cool, after which pour in it about the like quantity of water, and boil over a heated sand bath until about half of it is evaporated; remove and pour the solution into a glass or porcelain dish, and rinse the flask several times with small quantities of warm water, which add to the solution.

Pearl Fisheries of Lower California.*

(*Concluded from page 37, July, 1890.*)

FOR more than 300 years these fisheries have been in the posses sions of private grants dating back to the days of the conquest. The Mexican Government has in recent years annulled the old grants and l·ased the fisheries to the highest bidders. The house of Gonzales & Ruffo, having offices both in La Paz and the City ofMexico, secured a concession for sixteen years permitting them to work the fisheries around the Espiritu Santo and La Paz Islands, which are considered the best of the beds. The Government has recently granted to a single firm the exclusive right to raise the mother-of-pearl shells, and for the reproduction of such oysters the system used in the State of Maryland will be followed. The fisheries, which constitute one of the leading industries of Lower California, are now diminishing yearly, and, owing to the continued exploitation, many of the ship-owners find themselves losers at the end of the season.

In the year 1831, according to T. J. Farnham,[1] more than $40,000 worth of pearls were taken from the coast of Sonora. The pearls from this fishery at one time brought from $150,000 to $200,000 a year. As the search has been so actively carried on, the Government has deemed it necessary to prohibit fishing the second time for a period of two years.

Robert A. Wilson,[2] in speaking of pearls, says: "Their abundance is one of the first things to strike a stranger on entering Mexico. Every woman above the rank of a peasant must have at least one pearl to ornament the pin that fastens her shawl or mantilla upon the top of her head." It is common to see girls with strings of pearls around their necks that would bring a large price in London, and there are women in La Paz who have pearls of extraordinary value, but are so poor they have not means to buy food.

The pearls of the Countess de Regia, of the Marquesa de Guadeloupe, and of Madame Velasco are from these fisheries and are remarkable for their size and value. The great pearl presented to Gen. Gaudeloupe Victoria, while President, was from the same locality. The pride of the Spanish regalia is an enormous Mexican pearl, which was secured near Loreto by a Mexican diver. This most perfect pearl weighs 400 grains. In the Bay of Muleje a pearl was taken weighing 400 grains and as large as a small egg. During 1883 several notable specimens were found, among them a light brown pearl, flecked with darker shades, weighing 260 grains, and valued at $8,000. It was sent to Paris. Another one was pear-shaped, white, with dark specks, weighed 176 grains, and sold for $7,500. About the same time the pearl merchants of La Paz secured a pearl from some unknown Indian diver for which they paid $10, and received for it $5,500 in France. It was oval-shaped, of a light sandy color, perfect in contour and brilliant in lustre, and weighed 32 carats. In 1881 a black pearl, weighing 162 grains, was sold in Paris for $10,000. During 1884 two other pearls, weighing respectively 140 and 124 grains, and of surprising lustre, brought $11,000. Recently a pearl from these beds, weighing 48 grains, was sold in London for $7,500. A black pearl weighing 108 grains, taken from the San Lorenzo Channel, was sold for $3,000. A year later one of the principal shipowners found a pearl weighing 300 grains, and in the same year another weighing 180 grains was sold in Paris for $1,000. More recently a fine pearl was found in the Bay of Guaymas that weighed 372 grains. At the World's Fair held in Paris during 1889 there was exhibited a set of seven black pearls from this district valued at $22,000. The poorer pearls are sold in Germany, the finest in the United States and France.

The largest and finest black pearls (for it is the black pearls which are the specialty of these fisheries) that have been found weigh from 120 to 140 and even 240 grains each. A pearl of 12 grains, which is perfect in beauty, color and shape, may be worth $200, but very slight defects will reduce the price to one-tenth of that sum. The best black pearls found come from these fisheries, though peacock-green, blue, green, gray, and white ones are also found. In shape they vary greatly, being spherical, pear shaped, egg-shaped, conical, in the shape of a little round loaf, or a wax match. Frequently pearls are found attached to and forming a part of the inside of the shell, instead of being in the membrane, when they are of little value, because they are difficult to remove, and are usually imperfect.

Most of the pearls from this place are sent to market by way of San Francisco. A letter to the author from a leading firm there contains the following: "The pearl fisheries average about 5,000 carats a year, which represent a value of $200,000, to which you must add about 800,000 pounds of pearl shells representing a value of about $180,000. The cost amounts to about $100,000." During 1887 it is believed that more than $50,000 worth of pearls were found. The total product of the fisheries has amounted to as much as $250,000 in a single year, and the sale of the shells to as much more. From November, 1868, till September, 1869, $26.000 worth of pearls were purchased from this locality by one New York house. These were of various sizes, including four that weighed over 20 grains and one of 49 grains. In color, the pearls from this locality vary from pure white through gray and brown to black. The latter have become so fashionable in late years that their value has increased ten-fold. One black pearl weighing 50 grains was valued at $8.000.

* From "Gems and Precious Stones in the United States, Canada and Mexico," by Geo. F Kunz. Published by the Scientific Publishing Co., 27 Park Place, New York. Copyrighted.

1 Scenes on the Pacific, p. 307.

2 Mexico, its Geography, its People and its Institutions (New York, 1846), p. 307.

Wet Coloring by the German Process.

TIE up your work in small bunches with fine silver or platinum wire; then, for 3 ounces of work, take a black lead pot 6 or 7 inches high, and having previously placed your work in hot water, put into it 6 ounces of saltpeter and 3 ounces of common salt; stir them well with a wooden spoon, and when thoroughly dried fine and hot add also 5 fluid ounces of hydrochloric acid. When boiling up, put in your bunch of work, having previously shaken the water from it, and keep it moving for three minutes taking care to keep it well covered all the time of the operation. At the end of this time take it out, and plunge it into a vessel of clean hot water, and finally into a second vessel of the same. Then add to your color in the pot 6 fluid ounces of hot water, and when it boils up again after having been thus diluted, put in your work for 1 minute longer, and again rinse it as before directed, when it will be found to be of a beautiful color. Too much clean hot water cannot be used for plunging the work into each time.

If the work is hollow and bulky, not as much as 3 ounces should be put in, as it is not effectually immersed in the pot.

In wet coloring, it sometimes happens that the color is rather dead, or it may happen that the "color" burns, which causes the work to look brown; this is a precipitation which may be removed by scratch-brushing at the lathe with stale beer, using a fine brass wire brush similar to the round hair brushes used for polishing.

In coloring, a large stone jar should also be provided, into which should be emptied your "color," when done with, because the pot should be worked out each time, so as to be ready when wanted again; also the wash-water used, as it contains quite a percentage of gold. All things in connection with the process should be kept clean and free from grease of any kind. Do not keep iron near this wet color in the pot, as it is most injurious.

The Repairs of a Detached Lever Watch.

Continued from page 75, July, 1890.

CONCLUDED



HEN REPAIRING a watch in which a new wheel is to be applied, it is necessary that the angle of the teeth of the old wheel should be looked to, as well as the size of the wheel and the thickness of the point of tooth. If a pallet depth is shallow and a new wheel is put in of a trifling larger size, care should be taken that the new one is not more sloping in the teeth than the old one, or else the pallets will be bound very hard; indeed, it is best to have the new wheel a little straighter in the teeth, if possible. The way some repairers free garnet stone pallets is with a sapphire file, which is only a medium-sized piece of sapphire flattened down in the ordinary way and cemented into a brass handle. The sapphire should not be flattened too rough, or it will chip the pallet stones. Ruby or any other stone pallets may be freed by making a small mill, to go into the turns, of tortoise shell or *vegetable* ivory, and having some diamond powder to rub on the mill. A quarter of one karat of diamond powder should be well mixed with a dessert spoonful of sweet oil; the mixture should be allowed to stand to settle for about two hours; it should then be poured off into another vessel and allowed to stand for a long time—until it settles and leaves the oil clear again. The first sediment will be too sharp to rub on the mill; it is the second deposit which is to be used.

When a watch "sets" on the impulse face of the pallet, the set can be removed by polishing the faces to a smaller angle, but the operator must be sure that the pallet depth is deep enough to permit of being made shallower and yet be safe, because by reducing the impulse angles the wheel will drop shallower, and although the watch will go while it is clean, if the pin and notch are not altered, yet if the pallet depth is not quite secure the wheel may sometimes pitch on the locking edge and probably stop the watch. If the depth is made too shallow by reducing the angles of the pallets, a trifle larger wheel must be put on.

When the pallet depth is *barely safe* and the pallets exceedingly full to the wheel, the depth may be made secure by polishing up both lockings. They must be polished a good deal or the polishing will not be of any use; this will save putting on a new wheel.

When the pallets are unequal and too shallow on one pallet only, the pallet should be fixed in some sort of clamps and the clamps made warm, and that stone raised up sufficiently, and the pallets afterwards freed if they require it. When a pallet depth is too deep the wheel must be topped. The topping of the wheel does not cause them to be foul outside, although the wheel is then smaller, the wheel being drawn further away altogether by the topping. When a lever is not equalized on the pallets, it mostly happens that the two pins are slight enough to permit the pallets to be so minutely twisted further round on the lever; but if the pins are thick they must be taken out and the holes drawn which ever way they require it.

When a guard pin depth is too shallow the pin must be bent minutely inward to the roller, and the bankings opened a trifle wider. When a guard pin depth is too deep, the edge of the roller may be topped down by a bell metal polisher and sharp crocus. If a screw is placed up *through the runner* of the turns, part of the polisher will work on the screw and part on the edge of the roller, so as to keep the edge of the roller square.

When the top point of the tooth of an escape wheel is thick, it will sometimes happen that the back of the teeth has a little polished hollow cut in them; this is caused by there always being a double clip, with thick, pointed teeth, just as the wheel leaves the impulse face. The way to prevent it is to thickly round off the discharge ends of the pallets, particularly the inside edge of the short pallet with a polishing mill.

When a watch "sets" on a locking, and you are sure that the locking angles would still detach after being made to unlock easier, the outside locking may be made a trifle more sloping, and the inside locking a trifle more straight (not so much cut under); this will also cause the wheel to take a deeper hold of the lockings, which will be no harm if the pallet depth is not too deep already. If the watch is a small one, having a little steel balance, and consequently a very weak balance spring, the spring, when it is so very near its rest, has not power to twist round the pieces to extricate the locking from under the tooth of the wheel. In such cases the lockings would sometimes have to be so much altered to *completely* prevent a set, that the wheel would remain stationery where it dropped instead of drawing the pallet inward, and then the guard pin must trust to the momentum of the balance carrying round the lever sufficiently to free the pin of the edge of the roller. Such watches are constantly stopping, and never can be altered until the lockings are made to draw into the wheel. In all such cases it is best to let them set a little rather than persist in *completely* getting off the set.

Many years ago curved-shaped lockings were often made to pallets. They are more dangerous than straight-lined lockings, for even supposing a few cases in which they answer well, they will not do so in general, simply because they require to be made with almost mathematical precision to answer well. The writer knows as much about the evils of tampering with the lockings of pallets as falls to the lot of the average man, and could speak of cases that would shock sensible men. It is utterly impossible to do better than is now done by careful watchmakers.

It is a good rule, when a person takes an escapement into his hands to look first at the escape wheel and pinion, to see that he has not a fully large wheel to the pinion; next hold up the pallets to the light to see that they have not very great angles on them; then compare the radii of the lever and wheel, and see that the lever is not much longer than the wheel; and finally, see that the roller goes three or four times in the lever, reckoning the roller from balance staff to ruby pin. If he has these things the escapement will do well as regards its pieces, all the rest depending upon properly fitted pivots, proper depth and freedom, well uprighted staffs, poising, banking and equalizing.

SWISS WATCHES IN ENGLAND.—The Swiss consul at London writes to his government "that according to the information he has gathered, the Merchandise Marks Act has been unfavorable to the importation of Swiss watches. The attention of the English public having been attracted toward the English watch by reason of the discussions caused by the passage of the act, the English manufacturers have made great efforts to perfect tools and machinery to produce a better-grade watch, and thus satisfy the demands of their home customers. Accordingly the sale of the good quality of Swiss watches is becoming very small. The ordinary [Swiss] watch at the price of 20 francs [$4.00], still holds the market, not having any other competitor than the Waterbury. * * * Nothing specially need be said of the importation of American watches in England, as it finds its principal market in Australia, as well as New Zealand."

Marriage may be a failure, but the solitaire engagement ring is not.—*Jester.*

supporting and having journaled therein or thereon a portion of the active mechanism of the watch, whereby the movement may be adapted for use either in an open case with the figure XII of the dial placed at the pendant or in a hunting-case with the figure III at the pendant.

432,290.—Interchangeable Stem-Winding-Watch Movement. — Henry Abbott, Newark, N. J. Filed Jan. 21, 1889. Serial No. 297,593. (No model.)

432,291.—Interchangeable Stem-Winding-Watch Movement. — Henry Abbott, Newark, N. J.—Filed Jan. 21, 1889. Serial No. 297,594. (No model.)

432,365.—Method of Forming Rings.—Joseph B. Bowden and Hermann V. Bernhardt, Brooklyn, N. Y.; said Bernhardt assignor to said Bowden. Filed May 26, 1890. Serial No. 353,209. (No model.)

Issue of July 22, 1890.

Design Patent No. 20,043.—Precious or Imitation Stone.—Jean G. C. Cottier, New York, N. Y. Application filed April 18, 1890. Serial No. 348,556. Term of patent 7 years.

Design Patent No. 20,051.—Forks, Spoons, &c.—George H. Balch, Newburyport, Mass., assignor to The Towle Manufacturing Company, same place. Application filed June 27, 1890. Serial No. 356,996. Term of patent 7 years.

432,584.—Watch-Key. — Rudolph Ueltzen, New York, N. Y. Filed Jan. 11, 1890. Serial No. 336,642. (No model.)

432,690.—Process of Making Compound Ingots.—Levi L. Burdon, Providence, R. I., assignor to the Burdon Seamless Filled Wire Company, same place. Filed Feb. 21, 1890. Serial No. 341,252 (No model.)

432,691.—Manufacture of Compound Ingots.—Levi L. Burdon, Providence, R. I., assignor to the Burdon Seamless Filled Wire Company, same place. Filed March 11, 1890. Serial No. 343,525. (No model.)

432,709.—Stem-Winding Watch.—Paul Perret, Chaux-de-Fonds, Switzerland. Filed Nov. 12, 1888. Serial No. 290,542. (No model.)

432,761.—Manufacture of Watch-Case Centers. — Daniel O'Hara, Waltham, Mass., assignor to the American Waltham Watch Company, same place. Filed Nov. 2, 1889. Serial No. 329,036. (No model.)

432,762.—Chain-Guard for Watch-Bows.—Daniel O'Hara, Waltham, Mass., assignor to the American Waltham Watch Company, same place. Filed Nov. 2, 1889. Serial No. 329,037. (No model.)

432,791.—Lathe for Turning Pinion Shafts.—Duane H. Church, Waltham, Mass. Filed Feb. 24, 1890. Serial No. 341,581. (No model.)

431,859.—Key-Chain.—Justus A. Traut, New Britian, Conn. Filed Feb. 20, 1890. Serial No. 341,150. (No model.)

432,959.—Machine for Cutting Dies.—Horace Thurston, Providence, R. I., assignor of one half to John C. Schott, same place. Filed Dec. 24, 1889. Serial No. 334,854. (No model.)

A Victory for The Julius King Optical Co.

IN THE suit of Judge Mack, of Terre Haute, Ind., for whom the Julius King Optical Co are sole agents, against Levy, Dreyfus & Co., 11 Maiden Lane, for alleged infringement of an opera glass holder of which the former is the patentee, the letters patent of which were sustained as valid in a decision by Judge Shipman handed down May 20, 1890, were affirmed June 26, 1890, the judge allowing infringement on the 4th, 5th and 6th claims of the patent, but denying the other four on the ground that they had been anticipated. The history of the case is briefly this:

In November 1882, Judge William Mack took out a patent on a device to enable persons to hold an opera glass to the eyes without raising the arms above the breast. It was not until the fall of 1888, however, that the novelty was placed on the market. About that time the Julius King Optical Company, through its New York agent, Leo Wormser, by a contract with the patentee, was made the sole agent and manufacturer of the holder, which in a short time became very popular. Last July Mr. Mack, represented by the Julius King Optical Company, began a suit in the United States Circuit Court against Levy, Dreyfus & Co., for infringement of the patent.

During the following October Referee John A. Shields began to take the testimony of both sides, which occupied him nearly six months, and fills 220 printed pages. The arguments before the court was heard last May, the defense being that the idea had been anticipated in opera glass holder inventions previous to those of Judge Mack. To substantiate this thirteen printed publications, sixty-five patents, and thirty four specimens, some of which were over forty years old, were produced. A few weeks later Judge Shipman rendered a decree in favor of the plaintiffs. Both the plaintiffs and defendants made motions to reopen the case, but these were denied.

The court issued an injunction restraining the defendants from manufacturing, selling or disposing in any manner of the holders mentioned in the fourth, fifth and sixth claims of the plaintiff's patent. The fourth claim is for an opera glass holder made to close telescopically, the end section of which is provided with a fastening device or clutch for grasping the cross bar of the opera glass as described more particularly in claims 5 and 6. The 5th claim is for a holder in telescopic sections, the end section forming a cylinder in which are placed a spring, piston and hook. The 6th claim is for a combination with an opera glass of a handle made in sections, the and section being provided with a clutch and bifurcated slot.

The judge's opinion is quite exhaustive, and we quote from it only a few of the most salient sentences:

"The principal object of this invention, described in the patent of 1882, was to enable persons who use opera glasses to hold them to the eyes in such a manner as not to raise the hands higher than the breast when using the glass, or to permit the arm to rest upon the arm of the chair. A second object was to construct the handle so that it could be folded up in a small compass. Mack's invention consists in a detachable opera glass handle, the end section being provided with a fastening device consisting of a piston, hook and slot or their equivalent, the hook and slot being brought together by means of a spring. But the means by which the hook and slot are brought together are not of the essence of the invention. It is not necessary that a spring should be used to cause the hook and slot to approach one another. Other like means are properly within the scope of a portion of the claims of the patent. * * *

The judge then characterized some of the plaintiff's claims as too broad and refused to allow them. The suit involving the 1889 patent was dismissed. In conclusion, he says:

"Let there be a decree for an injunction against the further infringement of the patent of 1882, and an accounting as to the infringement of the fourth and sixth claims thereof."

Claims one, two, three and seven, which were denied, are as follows: 1. The combination of an opera glass with a detachable handle for holding said glass to the eyes of the holder. 2. The combination of opera glass with a detachable handle, the handle being arranged at any suitable angle that will adapt the glass to the position of the eyes when held in either hand. 3. The combination of an opera glass with an adjustable handle, the said handle being elongated at will. 7. As an article of manufacture, an opera glass handle made in sections and provided at its ends with clutching devices. The Julius King Optical Co. are now pursuing another suit in equity based upon the two patents, and shall continue to sue all makers and dealers.

On Monday, July 14th, Commissioner J. A. Shields began a hearing to determine the the amount of royalty and damages to which the plaintiffs are entitled. On the evening of the same day Leo Wormser, to whose assiduty the result is largely due, gave a complimentary dinner to his friends, associates and the press to celebrate the success of his firm in the litigation. The dinner was given in the private room of the Lawyer's Club, in the Equitable Building. There were present in addition to the representatives of the trade press, Messrs. J. T. Scott, H. A. Bliss, H. A. West (counsel for the company), George Carleton Comstock, Frank Bentley, S. Eastman. Edwin W. Terry, John L. Shepherd, A. Rosenthal and Leo Wormser.

Mr. Comstock acted as toastmaster, selecting appropriate toasts, to which each one made an impromptu reply. Mr. Wormser in his remarks alluded in flattering terms to Counsellor West, to whose diligent efforts, he said, were due the victory gained. After drinking to the health of the company and the future success of the Mack patent opera glass holder the company dispersed. The menu which was thoroughly enjoyed, is appended:

THE OTHER SIDE OF LIFE.

A MINERALOGICAL PARADOX.

KNOWLES—You were to the races yesterday?

BOWLES—Yes, and I played all the Rocks—Blue Rock, Grey Rock, and Silver Rock and—

KNOWLES—Well?

BOWLES—I lost all my rocks.

SHE DESERVED IT.

In a Jewelry Store:—"I love you," said the bronze figure of Venus to a Jurgensen above her, "because you have such an open face." And the watch ran down and kissed her.

A LONG FELT WANT.

KNOWLES—Fassett's making a fortune.

BOWLES—How?

KNOWLES—He has invented a process for manufacturing interchangeable monograms for engagement rings.

LOVE AND MONEY.

VERISOFT—I love you, dear Alice, and I ask you to be my wife.

ALICE—But you are too poor to buy the engagement ring.

VERISOFT—Yes, but you can loan me the money.

IN SHALLOW WATERS.

"Turn Back, O Time," is Fledgely's favorite air. He is somewhat of a musician, and his company is often solicited as much for his entrancing tenor voice, as for his charming personality and manners. On one occasion he was present at a party given by Mrs. Magnus Scott in honor of the birthday of her eldest daughter, Alice.

"Would you favor us by singing something appropriate to the occasion, Mr. Fledgely?" asked the hostess.

"Certainly, madame." And Fledgely sat down to the piano, and sang his favorite song.

ENTERPRISE.

OLD LADY (suspiciously)—You say these stones are real pearls?

ARABIAN FAKIR—I schwear it. My bruder, Ichabod, has bought him der twelve great pearl gates of heaven, and cut zem up into strings. Dot's why I solds zem so cheap.

HIRSHKIND'S BUSINESS REASONING.

HIRSHKIND—Und vat may be the price of this vatch?

JEWELER—Ten dollars

HIRSHKIND (sotto voce)—He asks ten; he means eight; he'll dake six; it's vorth four; I'll offer two.

BREACH OF HYGIENIC LAWS.

HAWOLD—You look all bwoke up, Cholly. By Jove, what ails you, deah boy?

CHOLLY—Tewible accident, Hawold. Arfter doing my toilet larst night, forgot to put on my finger wing again, and so caught a twemendous cold.

A WELCOME BURGLAR.

BUGGS (proprietor of cross-roads jewelry store)—Hello there! who's below?

A Voice Below—A burglar; I am looking for your sterling silver.

BUGGS—Hold on; I'll be up in a minute and help you.

REDUCTIO AD ABSURDUM.

JUDGE (to prisoner)—You are charged with entering this man's store and stealing a clock. What have you to say for yourself?

PRISONER—I am not guilty of theft; I am guilty only of procrastination.

JUDGE—Only guilty of procrastination? How so?

PRISONER—I am the thief of time.

AN OBSCURE COMPLIMENT.

GWENDOLIN—I have often wondered, Mr. Fassett, what your age may be.

FASSETT—Well, Miss Gwendolin, thirty-seven years have come and gone since I first saw the light.

GWENDOLIN (snickeringly)—And do you know how old I am?

FASSETT—I do not know how old you are, but you don't look it.

TIT FOR TAT.

MRS. MAGNUS SCOTT (prepared to go out)—Does this gold necklace match the white lace of my dress?

MR. MAGNUS SCOTT—It does.

Mrs. M. S.—Would silver look better and cooler?

Mr. M. S.—It would not.

Mrs. M. S—How does my hair look?

Mr. M. S.—Comme il faut.

Mrs. M. S.—Is my bonnet on straight?

Mr. M. S.—Very.—Can you see the holes in my socks?

GENEROSITY BEGINS AT HOME

NOYES E. HOWELLS—Gwendolin reaches her nineteenth birthday on the 4th of next month. I intend to give her a diamond ring.

DASHARD POORE—I wish I were rich enough to buy a diamond ring.

MAUD LINN—She'll take the will for the deed.

DASHARD POORE—Yes, if I were rich enough to buy a diamond ring for Gwendolin, I'd buy a pair of shoes for myself.

"Who is happy on this mundane sphere" sneeringly exclaimed Pessimus.

"The girl with her first engagement ring" triumphantly replied Optimus.

WOULD IT REPAY HIM?

BOWLES—Miss Alice, when I leave you in a few minutes, I may never see you again for I sail in an hour to Australia. You know how I have loved you, and though you have not reciprocated the feeling, I hope you will think of me sometimes when I am grinding out a wearisome existence at the Antipodes.

MISS ALICE—(who has a penchant for jewelry)—I will endeavor to think of you sometimes; but, Mr. Bowles, if you will get me one of those pretty gold necklaces to which a lock is attached, I will give the key to your keeping. I will then be unable to take the necklace off, and it will be a constant reminder of you.

TRADE GOSSIP.

—We notice that Charles Pike, of Brooks & Pike, diamond mountings, 383 Washington street, Boston, won second prize in the Boston City Yacht Race, July 4th, sailing the *Auk*.

—H. McDougall, of Ketcham & McDougall, accompanied by his daughter, sailed for Europe last month on the *Servia*. They will travel on the continent during a period of between eight and ten weeks.

—The Meriden Britannia Co. and Wilcox Silver Plate Co. have each taken $8,000 worth of the stock of the E. A. Bliss Co., of North Attleboro, Mass, who recently moved their business to Meriden.

—Theodore Evans with Hodenpyl & Sons, 170 Broadway, New York, sailed for Europe on *State of Indiana*, July 30. After a short tour through Scotland, it is his intention to meet Mr. Hodenpyl, Sr. in London.

—The Progress Watch Case Co., Newark, N. J, have removed their New York office from 1½ Maiden Lane to 41 and 43 Maiden Lane, where they are represented by Jens F. Pedersen, who will visit the jobbing trade with a first-class line of samples.

—William Cooper has severed his connection with Hayden W. Wheeler & Co., 2 Maiden Lane, New York, as Southern traveler, and will hereafter, travel solely in the diamond interests of Joseph B. Mayer & Co., of Amsterdam, Holland, and Buffalo, N. Y.

—The Fahys Watch Case Co. have recently sent out to the trade a handsome catalogue of 56 pages, bound in paste board, containing cuts of the latest styles of their Monarch and Montauk cases prefaced by an article descriptive of their factory at Sag Harbor, L. I.

—The new polish, "Silverine," noted in our last issue, as the latest and most effective thing of the kind for cleaning and polishing gold and silver, silver-plate, nickel, glass, etc., can be obtained of the well-known jobbing house of D. F. Conover & Co., Phila., Pa. Every retailer should have it in stock.

—Mr. W. F. Martins, for some years in the employ of C. Dorflinger & Sons, cut glass manufacturers of 36 Murray street, has engaged with the Mt. Washington Glass Co., New Bedford, Mass., to represent them on the road, and will soon call upon their numerous friends in the trade with a brand new line of samples.

—The Pairpoint Mfg. Co., New Bedford, Mass., have a very convenient way of sending out handsome little circulars or leaflets, giving a selection of their newest goods from time to time. This is of great use to the retail jewelers who frequently finds a pattern illustrated that catches the eye, and thus leads on to an order.

—S. F. Merritt, Springfield, Mass., is having a large increase in business. He has had to enlarge his office and nearly double his shop capacity, and still from present indications the business will demand a larger shop in the near future. Merritt's eye glasss chains and novelties in that line, seem to meet with increased favor all round.

—The Excelsior Sign & Manufacturing Co., of Chicago, Ill, have just moved into their large four story building, where they will have greatly increased facilities for the manufacture of their celebrated watch tools, polishing lathes, foot wheels, etc. The company hope to give the watch makers of the United States the best tools for the money in the world.

—The new flat ware catalogue of the Wm Rogers Mfg. Co. will be ready for the trade about August 1st. Many new patterns have been added and it will make a good showing. This company has a new process by which they plate their extra plate, giving it an extra coating, and also hardening the silver and making it equal to others' 12 oz. or triple plate in wearing qualities.

—We cannot too strongly commend to our subscribers the facilities for advertising placed at their disposal by the Pictorial League, room 76 Tribune Building, New York. An advertisement which under other circumstances would attract little or no attention, will, when accompanied by one of the Pictorial League's cuts immediately catch the eye of the reader. These cuts are cheap, always spirited and to the point, and no advertisement which they illustrate can remain unobserved.

—Roy & Co., watch-case manufacturers, 61 Clymer street, Brooklyn, N. Y., are devoting themselves largely to the production of fine raised gold and diamond ornamented cases, for which they report an unusual demand. Recent additions have made their line of full engraved cases as complete in point of styles as many older in the market.

—C. A. Hamilton, Treasurer of the Rogers & Hamilton Co., the rising young silver plate concern of Waterbury, Conn., has been elected treasurer and general manager of the Bridgeport Brass Co., Bridgeport, Conn., in which he has been a stockholder for some time. The duties of the new office will in no wise interfere with Mr. Hamilton's connection with the Rogers & Hamilton Co., to the success of which he has given so much of his energies in the past, and with such excellent results.

—The Waltham Watch Tool Co. are preparing to move into their new building at Springfield, Mass. The structure is a convenient wooden building two and a half stories high, eighty-five by twenty-five feet, with an L for a boiler house, engine room twenty-five by thirty feet on the southerly side, and a brick chimney sixty five feet high. From twenty to twenty-five men will be employed to begin with, although two or three times this number could be accommodated. Most of the old Waltham employees will be retained.

—Calvin Bliss, after doing business in Ann Arbor, Mich., for 56 years, has sold out his jewelry store to his son Gilbert, and retires from active life. Mr. Bliss went to that city in July, 1834, and at that time was the only jeweler in the United States west of Detroit. He had served six years at his trade, and is to-day the oldest known jeweler in the United States in continuous service. He retires from business hale and hearty for one of his years. Mr. Bliss was the youngest of thirteen children, and his father was a lieutenant in the revolutionary war.

—It recently came to the knowledge of Foster & Bailey, the manufacturers of the popular "Mount Hope" sleeve button, that certain parties had in the past and were again intending to card an inferior button upon the "Mount Hope" card. They would, therefore, caution the trade against using these spurious goods. The card employed for the Mount Hope is a trade mark, and cannot be used for anybut the genuine patented article manufactured only by Foster & Bailey. Dealers will avoid all complications by noticing that the name "Mount Hope" is stamped on one of the arms of all genuine buttons of this name, and purchasing no others, as the manufacturers are bent upon protecting their rights.

—The statement in our issue of July 1st to the effect that the Roy Watch Case Co. had determined to abandon machine engraving and would in future devote themselves exclusively to hand engraving was misleading, and should be corrected. The Roy Watch Case Co. have always made hand engraving a distinctive feature of their goods, and never have made use of machine engraving in anything but the most insignificant way, and at the same time saw the folly of employing it and recalled the few pieces so engraved. Instead of this being a step in advance, it is a principle they have always adhered to and now believe in more fully than ever. They are the only watch case company numbered among the patrons of the Institute for Artist Artisans, 140 W. 23d street, where some of their designers are in constant attendance.

—In the new Platt building at 29 & 31 Gold st., New York, is one of the finest ring plants in the country, that of M. B. Bryant & Co., formerly in Liberty street. Increase of business having compelled them to seek larger quarters, they have spared no expense in equipping the new factory to obtain the facilities they need. Much of the machinery is new, and some specially ingenious devices are the product of the fertile brain of Mr. W. A. Bryant, the partner in charge of the factory. All through the establishment the most perfect system prevails. The motto of their advertisement, "And still the new transcends the old," is as applicable to their factory and its appointment, as it is to the superior goods which we might naturally expect from such a plant. As for styles and patterns their name is legion and it would be impossible to describe them, but suffice it to say that in all the popular styles such as friendship and fancy stone rings no better variety can be seen anywhere They also make a specialty of initial rings, the "Bryant," so stamped as a trade mark, having attained a very large sale, and being distinguished by originality of design and excellence of finish. The three travelers of the house, Messrs. Supple, Smith and Harmon, have just started out again with cases full of the newest things in their line, sure to need constant replenishing.

—Weis & Oppenheimer, 192 Broadway (Corbin Building), New York, say the reports from their travelers are very good, and that there is every indication of an excellent fall trade.

—Koch & Dreyfus, 23 John street, are sending out their corps of travelers to all sections of the country. They are now represented by Emil Schorbach, Geo. Mallet, Henry Heyman, Leo Goldsmith, and Sol. H. Veit.

—L. E. Hubbard has sold out his store at Medicine Lodge, Kans., to his brother, E. R Hubbard, formerly of Great Bend, Kans., and has purchased the establishment of Geo. E. Wiseman, of Park City, Utah, and moved thither.

—Aikin, Lambert & Co., 23 Maiden Lane, New York, say that the past spring business was better than for many years previous. The firm are preparing their salesmen, numbering eight or ten for their regular fall trips, and the force will all have started out to their several territories by August 5.

—The Ansonia Clock Company have made a series of new designs in clocks, which undoubtedly will prove acceptable to the trade. Some of them can be seen in this number of The Circular. They are of oak, nicely finished with solid brass trimmings, and have a very pleasing and novel effect.

—H. Kohlbusch, Sr., the old reliable manufacturer of jeweler's balances and weights, is now located in the very center of the jewelry trade, on the corner of Maiden Lane and Nassau street. Mr. Kohlbusch needs no eulogium from us, as his reputation as a maker of scales is well established. The entrance of his new office is on Nassau street.

—The great popularity of horse racing has had a noticable effect upon the business of Cross & Beguelin, 21 Maiden Lane, New York. The firm has run far behind on their well-known Centennial timers, chonographs and split seconds, of which they are manufacturers. They are constantly receiving invoices of these goods, but as soon as they arrive they are gobbled up.

—On July 1st the Metropolitan Burglar Alarm Co. sold out its entire plant and good will to the Holmes' Electric Protective Co. By the terms of the transfer the subscribers of the Metropolitan Co. are guaranteed their present tariff of $10 per month so long as they desire the service. The price of protection has been raised to $12.50 per month by the Holmes Co.

—A. Klingenberg, of 35 and 37 Park Place, New York, has now in stock his fall importation of fine ceramics and bric-a-brac, including Royal Worcester, Crown Derby, Doulton and other celebrated wares in bonbonnieres, candelabra and Meissen figures in great variety, as well as every meritorious novelty that the American and European manufacturer spreads before the trade.

—One of the most complete and artistic lines of diamond and fancy stone rings in the market is shown by Keer, Stern & Klein, 14 Oliver street, Newark, N. J., including a large variety of new patterns in both ladies' and gent's rings Their three travelers will soon be in their respective territories, Jacob Stern in the west, Alex. Klein south and west, and E. Sondheim in the east.

—Lawson & Van Winkle, of 11 Maiden Lane, are manufacturing in connection with their well known line of onyx goods, a large and attractive line of gold and silver mounted hearts in moonstone, turquoise, rosaline garnet, hematite, etc., which have proven very popular with the trade. Coral and onyx necklaces have been much worn of late, and they keep a fine assortment of these also.

—A. F. Cross, of Cross & Beguelin, 21 Maiden Lane, New York, will in a day or so, go to Schroon Lake, N. Y., where he has a handsome cottage. He will take his family with him, and will indulge in all the pleasures of a country house, until late in the fall. Mr. Beguelin, of the same firm, who with his family, has been spending the summer in northern New York, is at present at Saratoga.

—George W. Shiebler, silver ware manufacturer, of 8 Liberty Place, New York, places before the readers of The Circular some new designs in spoons and forks, which will prove of great interest to the trade. The illustrations herewith given are gotten up regardless of cost, as illustrations of fine goods should be. Of course our readers are aware that all productions of this house are in sterling silver.

—Isaac M. Miller, late of Miller Bros. & Co., New York, has his steam yacht *Vesta* completed. It was built by Lenox, of Brooklyn. She has an oak and cedar hull, steel boiler and a Greenfield condensing engine of twelve horse power. Mr. Miller, with a few friends, will take a trip this month to the Thousand Islands, via Lake Champlain and Lake George. Pleasure, reduced to scientific principles, will no doubt reign supreme.

—J. H. French, the well-known jewelers' auctioneer, commenced the mortgagee's sale of stock of J. P. Weixler, Worcester, Mass., on July 14. In spite of the fact that this is a bad season for such a sale, the bidders were quite numerous. The prices obtained were generally fair, and three good sales were made. The sales included a number of watches and a few diamonds. The object is to sell enough stock to cancel a $3,000 mortgage, the entire stock being valued at about $15,000.

—The stock of goods which Hayden W. Wheeler & Co., 2 Maiden Lane, New York, have prepared for the fall season is said to be the finest and most complete that the firm have ever carried. It includes everything in the line of watches, jewelry and diamonds. During the past six months or so, this firm have gone very extensively into the importation of diamonds, and now have an unusually large assortment of fine mounted goods. W. N. Walker, diamond buyer for the house, is in Europe sending over invoices of new goods.

—A meeting of the jewelers of Allegheny, Pa., was held on July 10, to consider the advisability of participating in the civic parade on July 17, in connection with the semi-centennial festivities of that city. A temporary organization was effected, August Loch being elected chairman and Chas. Rememan secretary. A meeting for the purpose of making final arrangements was held on July 14, and was well attended by the master and journeyman jewelers of the city.

—B. J. Cooke's Sons, Philadelphia, report that business is quiet, but not unusually so for this time of the year. They have already placed some large orders with manufacturers for their fall stock. C. J. and B. J. Cooke have each rented furnished houses for the summer at "Moores," about nine miles from Philadelphia. N. H. Cooke had a son born to him on July 7th; another "Nelson." W. L. Cooke's residence was robbed July 14th of $250 in money and jewelry by sneak thieves, who entered the house on the pretence of measuring for awnings. The thieves have been caught and some of the goods recovered.

—The Spencer Optical Mfg. Co., 15 Maiden Lane, New York, one of the oldest reliable optical firms in the country, have reason to feel proud of the success of the "Audemair" opera, field and marine glasses of which they are the sole importers. They are now issuing a new catalogue of these goods, containing an article on their structure and properties, and methods of determining their accuracy, quality and strength. This article is invaluable to the dealer in the selection of his stock and also for enabling him to talk intelligently to and advise his customers about their use. The trade should not fail to send for it.

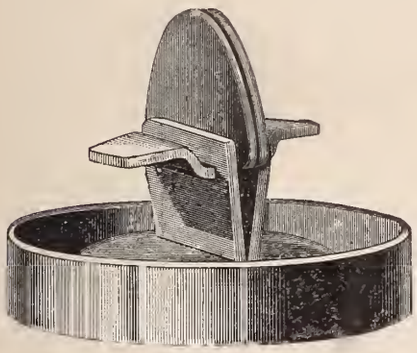
—Jacot & Son's advertisement as importers of musical boxes appears in this issue of The Circular. Jacot & Son are undoubtedly the headquarters of this business in the United States, their importations largely exceeding those of any other house in the trade. The best of everything in the way of musical boxes can be found here, and each season's novelties are comprehended in their stock. Their safety check provides against accidents, which were before so common, and the interchangeable cylinders give the purchaser the privilege of having their whole repertory of tunes with the same box when desired.

—Among the innumerable *articles de vertu* that make the salesrooms of Taylor & Brother, at 860 Broadway, New York, a veritable art gallery, is perhaps the largest and finest English hall clock in the country. It stands nine feet eight inches high, overshadowing other hall clocks near by. Its frame is of mahogany, every inch of available space being elegantly carved. The big glass door is handsomely ornamented with real brass designs, and the edges of the case are of the same material. The dial, which is of attractive white metal with separate brass figures, shows the days of the month and phases of the moon. There are three sets of chimes in connection with this clock, Westminister, Whittington and Cambridge.

—Our manufacturing jewelers who are not satisfied with their present factory accommodations, should not fail to inspect the different floors still to rent in the new building at 29 and 31 Gold street, one door from the corner of John street, New York. The floors are very large and lighted on both sides. There is plenty of power, and the floors are solid, being made of iron and brick. The building was erected for the convenience of jewelers. C. S. Platt, the owner, who is well-known as a assayer and refiner, has put in machinery for rolling gold and silver, which can be used at small expense by the tenants. The rents for the different floors appear to be very reasonable, and the location is within a minute's walk of the seat of the jewelry trade, Maiden Lane. We cannot conceive how manufacturers should prefer Newark or Providence, when they can have factory accommodations within call of their offices.

WHY

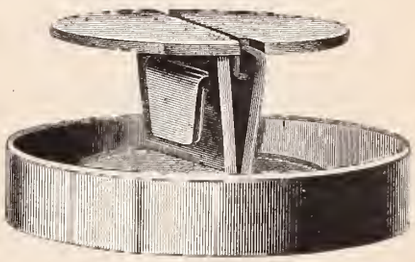
YOU SHOULD BUY THE



OPEN.

ANTI-SWEAR

CUFF BUTTONS.



CLOSED.

BECAUSE They are the only line of Cuff Buttons **WHICH IS NOT SOLD BY THE DRY GOODS TRADE,** thereby preventing ruinous competition.

BECAUSE they are simple and durable, having no steel or composition springs to get out of order and every pair is warranted.

BECAUSE they are automatic in their working, both in inserting and taking out of the cuff.

BECAUSE they can be inserted in a cuff or taken out **FASTER THAN ANY BUTTON EVER MADE.**

BECAUSE they were endorsed and recommended by the **OHIO RETAIL JEWELERS' ASSOCIATION,** also

BECAUSE we shall plaee on the market the finest and largest line of patterns of Buttons this Fall, ever offered.

Before purchasing elsewhere **WAIT AND SEE THEM**; or **SEND US AN ORDER** for an assortment on approval.

J. T. SCOTT & CO.,

SOLE MANUFACTURERS,

4 Maiden Lane, New York.

—Julius Laurençot, of J. B. Laurençot, starts on his eastern trip on the 4th of August.

—A. J. Logan, manufacturer of watch tools, Waltham, Mass., closed down for two weeks in July, but started up on the 21st, with a full complement of hands and plenty of orders ahead.

—A. H. Smith, of A. H. Smith & Co., is now with his family traveling in Europe, combining pleasure with business. He will return towards the end of October or beginning of November.

—The magnificent New York salesroom of the Meriden Britannia Co. at 44 East 14th street has been handsomely re-decorated. The walls and ceilings have been painted in soft though bright colors, and the flooring has been polished to almost the sheen of glass. The company are actively preparing for the fall campaign and are getting out illimitable quantities of new goods, especially in toilet and manicure sets and flat ware.

—The firm of J B. Laurencot have nearly cleared out their line of French clocks and bronzes, and will now devote themselves entirely to importing and selling full lines of optical goods of every variety, which they have now ready for the fall trade, and which opticians and jewelers are cordially invited to examine. Their Paris branch house is also open, and American opticians and jewelers traveling in Europe are welcome to the facilities it can afford as a depot for receiving and forwarding correspondence, etc.

—The Sumatra gem introduced this season by Albert Lorsch & Co., 37 Maiden Lane, New York, has proven a pronounced success. This stone which is cut like a diamond, has its fire and prismatic colors, and is the nearest approach of the real brilliant that has yet came under our notice. The stone is being mounted in fine settings by the leading manufacturers, making attractive articles of jewelry, easily mistaken by the unnitiated for diamond jewelry. It is safe to predict a successful career for this new addtition to the firm's line of semi-precious and fancy stones.

—The winter stock of oil prepared by Wm. F. Nye, New Bedford, Mass., has sold with great rapidity, and next year's supply will have to be largely increased to keep pace with the demand. Mr. Nye states that the principal watch factories of the country, after the most thorough tests, have adopted his oils in preference to all others, a high testimonial of their superior excellence. Wherever they are known (and where are they not known?) Nye's watch and clock oils are conceded to be unexcelled for purity and durability, the very low temperature at which they are refined making them proof against all atmospheric changes.

—F. M. Whiting & Co., the silversmiths, of North Attleboro, Mass., completed their first tea set in June, and now have a line of these goods comprising all the popular styles in repoussé, etched and engraved work. In novelties they show their usual large assortment, necessaries, knick-knacks and trifles too numerous to mention, but all most artistic in design and finish and moderate in price. A number of these serviceable little novelties are illustrated elsewhere in this issue. In their advertisement the firm call particular attention to the location of their New York office, which is at No. 857 Broadway, entrance on East 17th Street.

—S. F. Myers & Co., 52 Maiden Lane, New York, will shortly place on the market a new patent bell repeater, which can be sold by the retail trade at the astonishing low price of from $12 to $18. It will be a strong durable stem-wind and stem-set watch, striking the hours and quarters, and will be specially useful for short-sighted or blind persons, or for those who wish to tell the time in the dark. S. F. Myers & Co. have purchased the patent rights and will manufacture the repeaters in large quantities. As Mr. Myers tersely puts it: "There is nothing new in a repeating watch, but there is something new in one that can be sold by a retailer at from $12 to $18." Max Landman who has had charge of the material department of this house for several years, has been discharged.

—Charles Jacques, 2 Maiden Lane, New York, has received his complete stock of clocks for the fall season. It includes a number of fine office clocks with complicated movements, showing the moon phases, a calendar and a barometer. These clocks have never been imported as their price was too high; but their present prices allow them to be handled by all good dealers. Other noticable features in Mr. Jacques varied and complete stock, are a number of new designs in Sevres ware clocks, an extensive assortment of cheap though very attractive carriage clocks and several large carriage or mantel clocks, with a barometer set in the top. But it is useless to specify. The stock contains new designs in every variety of fine imported clocks, and no dealer while in town should miss seeing it.

—The father of all the jewelry auctioneers in the country is Colonel Jesse M. Rutherford, 618 Chestnut street, Philadelphia, Pa. Mr. Rutherford began this specialty of making jewelry auctions way back in 1858, and, with the exception of three years spent in the service of his country, has been engaged in it ever since. He has a method of conducting sales that is peculiarly his own, and invariably produces the most satisfactory results. Jewelers contemplating sales are advised to communicate with Colonel Rutherford, giving brief particulars, as his long experience will enable him at once to judge accurately of all the requirements of a sale and the probability of success. He refers in his advertisement in this issue to a large number of well-known jewelers in various parts of the country for whom he has conducted successful auctions.

—The Bowden seamless ring, recently placed upon the market by J. B. Bowden & Co., Corbin building (192 Broadway), New York, has proved eminently successful. It has been universally pronounced the perfection of a wedding ring. Being cut from a solid bar of gold and wrought into shape, it is without seam or connecting joint, and the sentiment of "endlessness" as conceived in a wedding ring is thoroughly consistent, which fact causes the ring to be very popular among women. There is really no competitor to this ring in the market. Messrs. Bowden & Co, to whom undoubtedly belongs the distinction of being the largest manufacturers of the better class of rings in the country, have, in anticipation of an unusually heavy fall trade, produced the most extensive stock of goods they have ever made, including everything in the line of gold rings from a 33c. child's to a $1,000 diamond ring.

—At a meeting of employees of the Jaccard Watch and Jewelry Company, Kansas City, Mo., on July 27th, the following resolutions were unanimously adopted:

Whereas, An agreement has been presented the retail jewelers of Kansas City, for signature, to grant their employees a half holiday every Saturday afternoon during July and August, without loss of wages; and

Whereas, The Jaccard Watch & Jewelry Company is the only retail jewelry house that has granted this request; therefore, be it

Resolved, That the thanks of the employees of the jewelry trade of Kansas City are tendered the Jaccard Watch & Jewelry Company for the spirit of generosity and independence displayed in ignoring the unfavorable action taken by the other houses; and, be it further

Resolved, That a copy of these resolutions be engrossed and presented to the Jaccard Watch & Jewelry Company, and that they be published in the daily papers as a slight testimonial of appreciation and regard.

Committee: Louis Kunz, Chairman, Chas. R. Nelson, E. F. Moritz.

—The Alvin M'f'g Co., Newark, N. J., have moved their New York office from East 14th Street to 860 Broadway, fourth floor, where they have fitted up elegant quarters for the display of their handsome line of cane heads and novelties in sterling silver. They have an announcement elsewhere in this issue, cautioning the retail trade against selling any deposit work or open ornamental work not made by them, as they hold patents covering this process and propose to protect their rights. Their new line of goods surpasses anything they have heretofore shown in beauty and novelty of design. Indeed, this young house has carried the process of electro-depositing on glass, wood, ivory, etc., to a perfection which must excite the wonder of even the most skillful metalworkers. Fancy toilet and stationery articles, jugs, pitchers, plates, pipes, cigar-holders, and all the thousand and one little articles of *vertu* that come within the province of the silversmith are found in their stock, and in entirely new and original designs. Dealers who are not acquainted with the merit of the goods manufactured by The Alvin Mfg. Co. are neglecting their own interests.

—One of the few concerns in this country who are manufacturing a line of art metal goods, especially designed for the jewelry trade, is the Craighead & Kintz Mfg. Co., 33 Barclay street, New York, with factories at Ballardvale, Mass. They manufacture a large variety of banquet and piano lamps, toilet tables, sconces, statuettes, etc., in old silver, old brass, oxidized and other popular finishes, all in the highest style of design and finish. One of their specialties is the well-known "Daylight Lamp," with patent central draught burner, which sheds a light almost as clear and radiant as sunlight, and is appropriately named. Among the novelties which they show this season is an extension piano lamp surmounted by a candelabrum and called a lampadarium; a piano lamp with pedestal of elephant's heads and tusks, a very unique idea; a winged figure in antique silver on an onyx pedestal, representing Victory, a facsimile of a figure excavated at Pompeii, and now in the museum of Naples; and—the most striking, perhaps, of all this season's exhibits—a line of piano lamps, banquet lamps, mirrors, etc., in what is termed the First Empire finish, a combination of old ivory and gold, exquisite in its delicacy of color and outline.

—David Hess, Ottawa, Ill., died on July 23d. His estate will be settled by A. Hess & Co., of the same city.

—Henry Blog and Marcus Blog have established themselves at 52 Maiden Lane as diamond cutters and polishers. The style of the firm is H. Blog & Bro.

—While out driving, Mrs. J. W. Curtis, wife of the well-known jeweler, of Warsaw, Ind., met with an accident caused by the running away of the horse and the upsetting of the carriage. It was at first thought that the injuries received were serious, but the lady is now convalescing rapidly.

—F. W. Johnson, of Cumberland, Md., has just placed in his establishment a handsome safe made by Hall's Safe and Lock Company, of Cincinnati. The safe weighs 4,500 pounds, and is of the latest and most improved pattern, is fire and burglar proof. The "spindle" is so arranged that it cannot be driven in or pulled out.

—The National gymnasium just completed at Elgin, Ill., for the especial benefit of the watch factory people is a model of completeness Professor Everett, an athlete of experience, has charge of the establishment. The fees are $10 per annum for men, and $8 for women. During evening's the gymnasium is for the exclusive use of watchmakers, but all who are interested in physical culture in Elgin may use the rooms during the day by paying the annual fees. One hundred and fifty names are now on the membership roll.

—Attention is directed to the card of Berlin & Scott, on page 8 of this issue. To our knowledge no other firm in the country conduct a business such as they advertise, that of damaskeening watch movements for the trade. They have done some exceedingly handsome work for several watch factories, besides for many business houses.

—The Retail Watchmakers' and Jewelers' Association, of Portland, Me., have been organized, and the following gentlemen have been elected to the official positions: President, John W. D. Carter; Vice-President, William F. Todd; Treasurer, Ira Berry, Jr.; Secretary, R. B. Swift; Board of Government, William Senter, Albion Keith, Chas. H. Lawson, George H. Griffen, Rudolph H. Boynton.

—Levy, Dreyfus & Co., optical dealers, 11 Maiden Lane, wish to announce to the trade that they will still continue to manufacture the loop opera glass holder, which in the recent Mack patent suit was declared not to be an infringement, and are now engaged in perfecting a holder which they claim will be superior to any now in the market. They are constantly showing new designs in this popular novelty.

—The Chicago Horological Institute is fast taking the lead among the schools of this kind. A largely increased attendance is assured this fall, and everything is in readiness for their reception. The wiring of the school for electric lighting is about to be put under contract so as to be ready for the short days that will soon come. President Frink is a worker, and has made this school the success it now is. The beautiful specimens of work shown by the students are ample proof of what first-class instruction will do for the student who has pluck and a desire to learn. Many of the young men have no means except what they have saved by hard work to enable them to prosecute their studies so as to become competent workmen.

—Ostby & Barton, Providence, are outgrowing their recently enlarged quarters, so remarkable has been the increase in their business. They are continually adding to their line of rings, and now show as large a variety of styles and patterns as any house in the country. In fancy rings, including friendship, knot, forget-me-not and all the prevailing sentimental rings, they report an enormous demand and can with difficulty keep pace with it. While extending their line of fancy rings, they have not neglected the band ring for which they early established a reputation. The name Ostby & Barton is still synonymous with all that is odd or attractive in style and low in price in the line of band rings.

—M. Fox & Co., 1 Maiden Lane, New York, have had the first selection of an importation of rough opals from a newly discovered mine in Australia, have had the stones cut at their own lapidary works and have placed a number of them upon the market. The stones are quite distinctive in character and many are very handsome. Those who have seen the stones have passed very favorable comments upon them, and dealers who desire to handle such goods should not fail to examine them. This firm, who carry perhaps the largest line of assorted fancy stones in the city, have just received several cases of new goods, including Hungarian opals, emeralds, rubies, sapphires and other fine colored stones. Such goods Messrs. Fox & Co. make a specialty of, and do a large business with the trade throughout the country.

—On Monday, July 21st, the American Trade Press Association, organized in Philadelphia on June 17th, held its first annual meeting at Delmonico's. There were present representatives from nearly all the papers belonging to the association, including the *Upholsterer*, the *Haberdasher*, *Paper and Press*, *The Confectioners' Journal*, THE JEWELERS' CIRCULAR, *The Western Brewer*, *The American Exporter*, *The Boot and Shoe Recorder*, *The Inland Architect*, *The Dry Goods Economist*, *The Clothing Gazette*, *The Sanitary News*, *The Electrical World*, *Builder and Decorator*, *Carriage Monthly*, *Farm Implement News*, *Light, Heat and Power* and the *American Miller*. The constitution as finally amended was adopted, and the following board of officers was elected for the year: President, C. R. Clifford, of the *Upholsterer;* 1st Vice President, H. R. Elliott, of *The Dry Goods Economist;* 2d Vice President, Clarence E. Stump, of the *Electrical World;* Treasurer, Benjamin Lillard, of *Druggists' Circular;* Secretaty, W. M. Patton, of *Paper and Press;* Board of Directors, W. L. Terhune, of Boston, Thomas Hudson, of Chicago, and Joseph W. Gibson, of New York. It was voted to hold the next annual meeting on the last Thursday in August, 1891. After the business meeting was over the members sat down to an enjoyable banquet, at which the many projects the Association has in hand for the common benefit were discussed while good fellowship reigned supreme.

—Under one proprietor or another, the marble and onyx works of S. Klaber & Co. have been in existence since 1849. During these forty years the products of this establishment have become known to everyone with any pretensions to taste, and the name Klaber has become synonymous with everything that pertains to high art in onyx working. The expression, "Klaber's onyx goods" is as familiar in the mouths of the art-loving public as "Gorham silverware" or "Dorflinger's cut glass." The position this firm hold in this class of industry is pre-eminent and unassailable. The variety of designs in each particular line of manufacture, and the most consistently excellent workmanship displayed in each piece, whether of high or medium price, excite the sense of marvelousness in the beholder. One will fully appreciate this assertion by a visit to the firm's elegant show-rooms at 47 West 42d street, New York. These rooms, though always spacious, have just been doubled in capacity. There are five rooms, two of which are fitted with goods especially adapted to the jewelry trade; pedestals, cabinets, tables, lamps, clocks, etc., in endless variety are displayed. The term "elegant" to describe these wares would be as incomplete as the phrase "words fail." They must be seen to be fully understood, and every dealer would find it greatly to his interests, both from an intellectual and financial standpoint, to visit the rooms. In the other three rooms are displayed slabs of the raw material, and magnificent mantels. If the visitor fails to wonder at the possible achievements in onyx working he will be more than human. Many jewelers who have visited the remodelled rooms have expressed themselves to the effect that they have never seen anything to compare with them. A buyer for a large Chicago house, to whom it had been somewhat difficult to sell these goods, visited the rooms last month, and seeing the goods in their reality, placed large orders. Two points should be remembered by the retail trade; that while manufacturers of first class goods generally have a retail department in connection with their establishments, this firm has always done a strictly wholesale business; that the prices of their wares are low enough to enable all progressive dealers to carry a line of them.

Among the Watch and Clock Companies.

—The Otay Watch Co. will have an exhibit at the Spokane Northern Exposition, to take place this fall.

—The N. Y. Standard Watch Co. claim to be making and selling 1800 watches a week.

—The Joliet Clock Co., recently burned out, has been reorganized, and will soon be turning out again their electric street clocks.

—The output for the six months ending June 30, of the Elgin Co. was 1800 movements per day. The number of operatives at the present time is 2800.

—The Otay Watch Co. have received from Yokahama, Japan, orders for 600 watches. The factory is turning out mostly full jewel, adjusted, nickel, stem-wind movements.

—Assistant Superintendent G. E. Hunter, of the Elgin factory is on an extended business trip through Canada and the east. He will visit most of the watch case factories.

—The machine department of the U. S. Watch factory is at work duplicating tools and machinery for almost every job in the plant. A new 45 horse power engine during vacation was installed.

—There is an unexpected demand for the new No. 1 Howard movement, placed upon the market last July. The Howard Company have received more orders than they will be able to fill this fall.

—Stock books for subscribers to the stock of the Dubuque (Ia.) Watch Company are now open. The directors of the Dubuque Board of Trade met on July 11, and discussed the watch factory matter to no purpose.

—A meeting of the directors of the Cheshire Watch Company will be held at Cheshire, Conn., this week to determine what shall be done in regard to re-opening the works. The general belief is that the concern will be in active operation early in the fall.

—The latest rumor regarding new watch factories is that capitalists held a meeting on July 26, at Hamilton, Ont., and voted to establish a strictly first-class concern in that city, and stock to the amount of $250,000 was subscribed for. The capital stock will be $1,000,000.

—According to Assignee Evans, all the ex-hands of the Aurora Watch factory, with the exception of a half dozen or so, have been paid off. He says that the banks have disposed of all the watch movements they held as security, though they still have a claim of about $15,000 against the company.

—Treasurer Hammer, of the U. S. Watch Co., is rusticating at Tamworth Iron Works, N. H. Superintendent Nutting, of the same company, attended the funeral of his father at Ipswich, N. H., on July 12. Chas. F. Stubbles, of the Cheshire Watch factory has been placed in charge of the gilding room of the U. S. factory.

—The stockholders of the clock and watch works at Sterling, Ill., held a meeting recently to raise $10,000 to keep the factory in operation. Since the establishment of the business about a year ago the workmen have chiefly been employed in manufacturing machinery and tools. The company, it is said, are now about ready to begin turning out timepieces.

—August 9th will be anniversary day at the Hutchinson Horological Institute, La Porte, Ind., and it is proposed to properly observe the occasion with interesting exercises. This Institute has made marked progress during the past two years. The school was established with one pupil. To-day there are nearly thirty students enrolled, representing nearly every State in the union.

—The United States Watch Company are at work on an 18-s full plate model, it will, however, not be placed on the market this year. June witnessed the largest production in any one month in the history of the factory, namely, 97 movements per day. President Eaton, on his recent trip to New York City, closed contracts for more than $70,000 worth of movements for present and fall delivery.

—The annual meeting of the stockholders of the Seth Thomas Clock Company was held on July 10, at Thomaston, Conn., and the directors for the ensuing year were elected: Thomas D. Bradstreet, Charles H. Brake, Levi S. Parsons, George P. Rowell, Aaron Thomas, Seth E. Thomas and William T. Woodruff. At a meeting of the directors, held that afternoon, the following were elected officers: Aaron Thomas, President; William T. Woodruff, Vice-President; L. S. Parson, Secretary; Seth E. Thomas, Treasurer; A. J. Hine, Assistant Treasurer.

—On April 15, 16 and 17, thirty-three employes of the Keystone Standard Watch Company, through their attorney, filed mechanics' liens for wages due them. These liens aggregated $3,093. Last month D. Ramsay Patterson, assignee of the company, forwarded to his attorney, H. B. Swarr, a check for $3,142.66, payment in full of all the wage claims, interest on the same, cost of filing and the cost of transferring them to the City Trust and Safety Deposit Company, Philadelphia, his sureties. Mr. Swarr at once paid the money to Mr. Conyngham, the employes' attorney, who distributed it to the claimants.

—D. Ramsay Patterson, assignee of the Keystone Standard Watch Co., has petitioned the court to permit him to start the factory and complete the movements now lying unfinished at the factory. He states in his petition that the total amount of the liabilities do not exceed $90,000; that the stock of completed watch movements on hand would bring $65,000 in the market to-day, thus leaving a liability of about $25,000; that the incomplete movements in stock, worth now about $4,000, could be completed at a cost of $25,000, and would then be worth $50,000; that it would be to the interest of the stockholders and creditors to allow him to complete these movements and sell the entire stock of watches, thus protecting the plant from sale. George Nauman and D. McMullen representing some of the stockholders objected to the granting of the application, and asked for the appointment of a receiver to supplant the assignee. The petition will be answered about the 15th of August.

—The Waterbury Watch Co. have prepared an immense quantity of neat memorandum books, which they intend to send free of cost, in packages of 100 each to any retail watch dealer who sends a request. A blank space is left upon the last cover page of the books for the address of the dealer distributing them. This is an admirable advertising conceit, and every dealer should take advantage of the offer.

—The Rockford *Daily Register* of July 3, is authority for the following statement in reference to the Rockford Watch Co: Since the factory has been in the present building, which has been occupied for fourteen years, there have been manufactured and sold over $3,000,000 worth of movements. Secretary Knight's connection with the institution dates from 1886. He says the increase of business in 1887 over 1886 was $30,000. The increase in 1888 over the preceding year was $50,000, and in 1889 the increase was $33,000. The increase during the first six months of this year over the first six months of last year was over $26,000. Though there have been about 40,000 watches made and sold this year, preparations are being made to still further increase their manufacturers and sales. They are now working on the machinery for the new 16 size, and it will be ready by the first of September. The new 6 size they will begin manufacturing about the first of December, and it will be upon the market for the Christmas holidays.

A NEW WATCH COMPANY.

—The Paillard Non-Magnetic Watch Co. is now organized and fully equipped for business. The trouble which for some time past prevailed in the Non-Magnetic Watch Co. of America, and which finally led to the placing of the affairs of that company in the hands of a receiver, was in noway connected with the success of Paillard's inventions. The popularity of the Paillard non-magnetic watches, and the rapidly increasing demand for them, have caused the organization of the Paillard Non-Magnetic Watch Co. for the purpose of continuing their manufacture and sale. This company are licensees under the Paillard patents and no other organization possesses these rights; they have acquired the manufacturing facilities formerly possessed by the Non-Magnetic Watch Co. of America, which cost that company many hundreds of thousands of dollars to build and equip, and they will manufacture the same grades of movements as were made by the old company, and will add new grades from time to time. As the Paillard Company have none of the old stock and their factories having gone through the experimental stages, all movements sold by them will hereafter be of the newest models, and contain the latest improvements; every movement will be fully warranted and prices will be guaranteed. While the Paillard Company is new in organization, this cannot be said of their productions nor *personnel*, as the name "Paillard" is known to every watch dealer in the country, and the reputation of this watch is established, while the gentlemen managing the company's affairs are by no means strangers to the business or trade; W. W. Hammond, Secretary of the Peoria Watch Co. is President, C. P. Bruch, Secretary and Treasurer, held a similar position with the old company, and A. C. Smith, General Selling Agent, who held the same position with the old company from their start, and has been identified with the non-magnetic watch business ever since its origin. The company have elegantly appointed offices in the Corbin building, corner of Broadway and John street, New York, have begun business under the most favorable conditions, and with the brightest prospects. They have our best wishes for their success.

DEATH OF EDWARD L. BRONSON.

Edward L. Bronson, late treasurer of the Waterbury Watch Co., and a resident of the city of Waterbury, passed away on Sunday, July 20th. Quiet and unobtrusive in manner; gentle and considerate in both home and business life; industrious, prompt and of sterling honesty, he was a factor in the community to an extent that in the even tenor of his ways was less recognizable during life than after his departure when his usefulness was the more conspicuous in its cessation.

Mr. Bronson was born in the town of Middlebury, January 18, 1828. Leonard Bronson, his father, was a man of much ability and was thoroughly respected in a wide field of acquaintances. The mother of the deceased, Nancy Richardson, was a daughter of Nathaniel Richardson, a descendant of one of the old families in Waterbury. Mr. Bronson married Miss Cornelia Townsend of Middlebury, who survives him with a daughter, Miss Julia, and an adopted son, Charles P. Bronson.

The death of Mr. Bronson created a vacancy in the board of directors of The Waterbury Watch Co. and also in the treasurership. E. L. Frisbie, Jr. was duly elected to fill the vacancies.



VOLUME XXI. NEW YORK, SEPTEMBER, 1890. No. 8.

THE JEWELERS' CIRCULAR
AND
HOROLOGICAL REVIEW.

OFFICIAL REPRESENTATIVE OF THE JEWELERS' LEAGUE, THE NEW YORK JEWELERS' BOARD OF TRADE, AND THE JEWELERS' SECURITY ALLIANCE.

It is also the Recognized Exponent of Trade Interests.

A MONTHLY JOURNAL DEVOTED TO THE INTERESTS OF WATCHMAKERS JEWELERS, SILVERSMITHS, ELECTRO-PLATE MANUFACTURERS, AND THOSE ENGAGED IN THE KINDRED BRANCHES OF ART INDUSTRY.

SUBSCRIPTION.—To all parts of the United States and Canada, **$2.00 per Annum,** Postage Paid. To all Foreign Countries, **$3.00 per Annum,** Prepaid.

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189 BROADWAY, NEW YORK.
CHICAGO OFFICE, 125 STATE ST., Room 18.

☞ *Advertising rates made known on application.*

Subscribers will do a favor by notifying us at once upon the non-receipt of any number of THE CIRCULAR. The mails will occasionally miscarry, but we will cheerfully make good Uncle Sam's little shortcomings by sending another copy to replace any missing one.

GOSSIP OF THE MONTH.

☞ A full Index to Advertisements and a Table of Contents will be found on Page 5 of this issue.

THE RAPID advance in the price of silver bullion has necessitated further concerted action to raise prices on the part of the silverware manufacturers. At the invitation of the New York silversmiths, a meeting of the prominent silversmiths of the country was held at the Everett house, New York, Tuesday, August 26, to consider the matter of the advance of manufactured articles of silver in accordance with the rise of silver bullion, consequent upon the passage and enactment of the Silver Bill. All the principal manufacturers were represented. It was agreed at this meeting to advance the prices of forks and spoons in accordance with the further advance of silver bullion. It was the opinion of those present that the price of silver, under continued Treasury purchases, would in the near future, reach the limit provided for in the bill, namely, 1.29 $\frac{29}{100}$. Such is the intent of the Silver Bill, and the wish of the present administration as expressed by the Treasury officials. This policy, if carried out at the same rate as under the present rule, which provides for three Treasury purchases each week, cannot but still further enhance the price of silver bullion, already well advanced. The point to be remembered by the trade, in reference to the action of the silversmiths, is that the price of silver forks and spoons will not in reality be advanced except *in proportion to the increased price of silver bullion*, and in that proportion only. Thus the prices of these articles will really be relatively less than they were before the passage of the Bill.

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Read the article on "Watch Oils" by C. Dietzschold, Imperio-royal Director of the Horological School at Karlstein, Austria, with supplement on "American Watch Oils" by Wm. F. Nye.—Page 57.

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THE "brazen-throated" watch war of the New York *Weekly World* has quieted down into a feeble little skirmish owing to the scarcity of ammunition. Instead of writing long leaders abusive of the Jobbers' Association, the jewelry trade and the tariff, the *World* is now occupied in framing denials and retractions in the vain endeavor to come out of the tangle in which it has been caught with at least one friend left. In this it is not likely to succeed. It has made itself heartily detested by every member of the jewelry trade throughout the entire country, and has gained nothing commensurate with this loss of prestige and good will. The editor has raised such a hornet's nest about his devoted head that we doubt very much whether he will now have the hardihood to develop any further the scheme for "furnishing the necessaries of life at cost," with which the editorial fancy played so fondly before the late unpleasantness. The *World* may as well spike its guns at once and abandon a position which it has found to be indefensible.

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If you are an optician or wish to become one, Dr. Bucklin's series on "Mechanical Ocular Defects," is just what you need.

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ONE would scarcely recognize, in the mild and conciliatory article on the "*World's* Watch War," in the issue of the Weekly *World*, August 27th, the rampant fire-eating champion of recent date. It now professes to be catering only to what it calls the

"settlers," or that large class of persons who live remote from towns' and hence far from established jewelers—and claims that its crusade is directed against the "sharks" or swindling watch dealers that use the mails. Elaborate calculations, based on figures ostensibly taken from the census reports, are made to show that nearly one-half of the population of the United States are dependent upon the mails, or the newspapers, for their purchases of watches. This is a preposterous claim. It cannot be denied that many watches are purchased through the mails in the way the *World* indicates, but these purchases are comparatively few. The majority of those living apart from the convenience of settlements are tributary to the nearest towns, and when they want to make purchases they go to reliable merchants in these towns. The village merchants advertise for this country trade, and naturally expect to get it. A few of the most ignorant persons are misled into patronizing the "sharks" and bogus watch schemes that thrive chiefly in the western cities and reach their victims chiefly through the newspapers. These swindlers, however, are not numerous, and their careers of extortion are soon cut short by the postal authorities. They would be excluded from the newspapers altogether if editors were more careful to satisfy themselves of the standing of their advertisers. The 20,000,000 "settlers" are not dependent upon these frauds for their watches. The truth of the matter is the *World* has got into hot water in this "watch war;" it has gained little or nothing in the way of subscribers, it has lost prestige among business men, it has incensed the entire jewelry trade, and is now floundering about in the hope of salving over the trouble and retrieving its error. Having tackled the near-by trade, and been severely handled, it now directs its energies against the distant rural jeweler, who, as the *World* presumably thinks is too far off to show fight. But let the *World* beware. The fighting propensities of the Westerners are well authenticated. They have been known to make long journeys to clear off a score. The editor will have to get his life insured, and study the statistics a little longer, to prove that there are 20,000,000 people in the United States absolutely dependent on the *World*, and its accomplices in this abominable watch business, for their watches.

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Illustrated article on the Paris Sch ol for Jewelers' Apprentices. Page 65.

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PROSPECTS for the fall trade are generally reported good from all sections of the country. Crops are fair in most of the great agricultural districts, while the enormous yield of cotton in the South is giving great impetus to trade there. A big cotton crop means big money for the darkies that harvest it, and this again means big investments in cheap jewelry, of which the negroes are notoriously fond. The summer has not failed to show its quota of strikes, which have interfered with business locally and caused some suffering and loss, but the disturbances have not been widespread enough to materially affect the fall outlook. Jobbers have been buying cautiously, failures have been comparatively few, jewelry, and especially silver goods of all kinds, are much in vogue, and, altogether, a good substantial trade may be expected. In fact, it is expected by the jewelry trade, and in business affairs the will makes the deed.

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Don't fail to read "Elsie Bee's" department and keep posted on Fall novelties.

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SPECIAL attention is directed this month to the article on "Watch Oils" by C. Dietzschold, impero-royal director of the Horological School at Karlstein, Lower Austria, with supplementary comments on American oil by Wm. F. Nye, New Bedford, Mass. The subject is one of the utmost importance to watchmakers in all parts of the world. The time keeping qualities of the finest and most accurately adjusted watch may be destroyed by the use of an inferior oil. The merits of different oils, therefore, and the knowledge of what constitutes a good watch oil are absolutely essential for the proficient watchmaker. As a matter of fact, few give it the attention it deserves. Again, the effect on oils of climatic conditions offers a wide and interesting field of experiment and inquiry, and one of which we believe no exhaustive study has not yet been made. It is Mr. Dietzschold's wish to continue his inquiries in this direction. He therefore requests THE CIRCULAR's readers, who are to be found in all quarters of the globe, to send him the results of their experience with different kinds of watch oil that he may collate and publish them with his own deductions. He also agrees to make experiments free of cost with samples sent to him, adding that it would be well to state in forwarding samples what kind of oil it is and how manufactured. Letters addressed to him may be written in English, French or German. Subscribers of THE CIRCULAR, particularly those living in hot or cold countries, should be able to impart much interesting information on this subject, and they are urgently requested to send their experiences in to Mr. Dietzschold and thus aid him in this useful work of research.

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Don't forget "The Other Side of Life," in reading THE CIRCULAR.

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THE intensest excitement prevails in southern Wisconsin over the fresh water pearl fisheries lately discovered there. Hundreds of farmers with their families, down to the four year olds, are enthusiastically engaged in the pursuit of clam digging, wading in the brooks, burrowing in the mud of the ponds and mill dams for the precious mussels. The scene on the banks of the brooks is so decidedly picturesque and reminiscent of earlier days of treasure seeking, that an old forty-niner's heart would leap at the sight. Everything else is forgotten in the temporary craze for pearl fishing. Excellent finds are reported, some pearls of surpassing beauty selling for as much as $2,000, according to rumor. The locality is apparently very favorable to the growth of the pearl-bearing mussel, and it is a pity that the fishing cannot be carried on with better care and system so as to prevent the wholesale destruction of the clams. The State geologist might properly take it upon himself to spread among the searchers such knowledge of the process of extracting the pearls, as is to be found in the valuable work on "American Gems and Precious Stones," by George F. Kunz. Nearly all the localities for fresh water pearls so far discovered in this country have been speedily exhausted by the hordes of vandal fishers that swarmed down from all the country roundabouts, as ignorant as they were eager. This Wisconsin fishery, however, is worthy of preservation. If scientifically cultivated it ought to yield pearls for many years to come. As it is, the mussels will be exterminated in a few months.

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WE DESIRE to contradict the report recently circulated to the effect that John Blair, lately and for the past twenty years an employee of this company and its predecessor, was discharged. Such was not the case; Mr. Blair tendered his resignation to the company, which was finally accepted, though with regret on account of his long and honorable service. His many friends in the trade will miss his visits, but they can rest assured that he is enjoying the ease and comfort to which he is entitled by a long life of industry and economy.

The Death of Horace C. Wilcox.

THE FOUNDER OF THE SILVER-PLATE INDUSTRY IN AMERICA PASSES AWAY.

THE KING of the silverware trade is dead. When the news had flashed over the wires that Horace C. Wilcox, the President of the Meriden Britannia Company had expired, and when the fact became generally known in the trade, it seemed as though some wheel in the great machinery of business had given way, and that collapse seemed imminent. The death of such a man who was chief administrator of one of the largest manufacturing enterprises in the world, the affairs of which spread out as some myriad-armed ocean, a man who for forty years has accepted business life in its broadest sense, a man who has exercised executive supervision over numerous conglomerate corporations, causes the most practical man to philosophize on the brevity of human life and its apparent incompleteness.

The death of this remarkable business man occurred at his summer residence at Cottage City, Martha's Vineyard, at 6.45 o'clock on Wednesday morning, August 27. About six years ago the deceased had a stroke of paralysis, since which time he had suffered from nervous prostration; but though advised by his physicians to relinquish business, he still continued to fill his multifarious duties. On the Sunday before his demise he had a second stroke and burst a blood vessel in his head, which left him in a semi-conscious condition till death stepped in.

Horace C. Wilcox came from old Connecticut stock, his ancestors having for over 250 years been located in various towns in that State. He was born in the old Wilcox homestead in Westfield on January 26, 1824, and was therefore in his sixty-seventh year at the time of his death. His father was Elisha B. Wilcox, a farmer, and he was one of twelve children. It was in the schools of Middletown, of which Westfield forms a part, that he received his education. During his spare hours he worked upon his father's farm, until he reached his 20th year, when, on account of the success attending his brother, Dennis C. Wilcox, who had engaged in selling tin and britannia wares, he determined to commence business in the same line. At the very start of his business career he displayed the perseverance and indomitable energy that characterized all his actions through life. Ambition filled his soul, and the desire to succeed was ever present in his mind. Through economy and self-denial he in a short time accumulated a little money and purchased some property in Meriden, upon which he built a storehouse for his wares and a residence. He later agreed to market all the product of the factory of Isaac C. Lewis, who for some time had been manufacturing britannia ware in Meriden. This concern existed for a few years, success attending all the efforts of the young man. Their plant consisted of a little shop, their machinery being run by horse power. The next step in the career of Mr. Wilcox was one that has resulted in establishing his name indelibly in the minds of perhaps every person in Connecticut, and in placing it at the head of an industry of which the United States is justly proud. This was his connection with the foundation of the Meriden Britannia Company, admitted to be the most extensive manufacturers of silver plated ware in the world. A biographical sketch of Mr. Wilcox is inseparable from the history of the inception and growth of this far-reaching enterprise.

Through the proposition of Mr. Wilcox, in the year 1852, a corporation with a capital stock of $50,000 was organized under the joint stock laws of Connecticut, for the purpose of manufacturing articles in britannia metal. The corporate name of Meriden Britannia Company was adopted, and the organizers were Isaac C. Lewis, Horace C. Wilcox, Dennis C. Wilcox, James A. Frary, Lemuel J. Curtis, W. W. Lyman and John Munson. The officers of the new venture were Isaac C. Lewis president and Horace C. Wilcox secretary and treasurer. These gentlemen were all practical manufacturers and men of business. They brought together an amount of experience and keen judgement which could not but make a success of any enterprise which they might have undertaken. Mr. Wilcox at that time was a young man with a physical constitution of iron, acquired by inheritance, early training and a life apparently free from all moral follies which so often sap the strength of manhood. It was this strength of fibre which enabled the Wilcox brothers, for Dennis C. Wilcox was of similiar constitution to his elder brothers, to take the helm of the business and steer it to success. Isaac C. Lewis and George R. Curtis, men of quiet and conservative disposition served, through their calm thinking, keen judgment and sound counsels, as a regulator to the more active endeavors of the Wilcox's.

In June, 1853, Mr. Wilcox relinquished the treasurership of the Company and George R. Curtis was elected in his stead. Mr. Wilcox retained the secretaryship. In the same year the Company commenced to utilize galvanic electricity in silver plating a portion of their wares, though britannia metal goods still formed their principal product. The process of electro deposition which had originated in England about the year 1840, was, some years later, unsuccessfully tried in America: but the new company were convinced of its value and were determined to create a demand for wares so treated. Though at first caution was exerted to produce no more than was actually demanded, it was not long before the old britannia ware was almost entirely displaced by the more attractive materials, until now and for some years past not an article of britannia metal has emanated from the factory. Though the nature of the company's business was radically changed, the original name was retained on the theory that it is unwise to change the name of a corporation under which it has achieved success.

To enter into an account of the rapid growth of the enterprise may be improper here. To the original frame building new buildings were added in 1855, and in 1863 the immense main brick structure was constructed. Since then numerous other buildings have been erected, until to-day a plant having a floor space of almost ten acres, or about 420,000 square feet, engages about 1,200 operatives to turn out silver-plated ware for the entire world. About 1865 was founded the salesrooms in New York, at 199 Broadway, on the site of the present Western Union Building. This department was under the charge of Dennis C. Wilcox. Through necessity for more commodious quarters, the salesrooms were successively transferred to 550 Broadway and to 46 East Fourteenth street, their present location. Meanwhile other cities claimed attention, and in 1867 a branch was opened in San Francisco; in 1878 the establishment of the distributing salesrooms in Chicago was effected, and in 1879 the works at Hamilton, Ontario, Canada, were erected. These latter works, which are larger than were the original parent works at Meriden, were inaugurated to satisfy the extensive demand in Canada for the company's goods, without the necessity of paying duties. In 1881 the London office was opened, and notwithstanding the phlegmatic and prejudiced character of Englishmen, the Meriden's wares have won marked favor in the very birthplace of electro-plate. In 1889, through the success attained by the company at the Paris Exposition, a branch office was opened at 26 Ave de l'Opera, Paris. To retrospect, the deceased, in the early years of the existence of the company, besides sharing the active administration of the concern, visited the larger cities of the country and sold the factory's products. At that early stage in the country's history commercial travelers were few, and whereas now silverware sold through salesmen is shown in photographs, the traveler then took with him the goods themselves, and improvised a temporary store in the rooms of the hotels at which he stopped, his patrons calling upon him upon invitation. In 1866 Isaac C. Lewis, having declined a fourteenth re-election to the presidentship, Mr. Wilcox was chosen to occupy that office, which he held to his death, a period of twenty four years.

Besides being president of the Meriden Brittannia Company, Mr.

Wilcox was closely identified with the majority of the manufacturing and financial institutions of Meriden, as well as the near-by cities. He was always ready to invest capital in any project that would advance the moral and material wealth of the town of his adoption, in which he ever had an abiding interest. He was a director in the following silver-plate companies: Meriden Silver Plate Company, Wilcox Silver Plate Company, Manning & Bowman Company, Meriden; R. Wallace & Sons Manufacturing Company, Wallingford; Rogers & Brother, Waterbury; Wm. Rogers Manufacturing Company, Hartford. He was also director in the Meriden Saddlery and Leather Company, Æolian Organ and Music Company, Meriden Horse Railroad Company, The Meriden Fire Insurance Company, and other corporations, and was president of the Meriden, Waterbury & Connecticut River Railroad, which was constructed almost exclusively through his efforts, and the Wilcox and White Organ Company.

Mr. Wilcox's career eminently illustrates the power of pluck and perserverance in a man's character. He was the highest type of New England energy, thrift, perseverance and strength of will. Possessed of a wonderfully strong constitution, combined with an ever present desire to work, the fruits of one day's labor would confound the ordinary mind in its attempt to appreciate it. Though always apparently engrossed in business he never shirked public duties and made his influence felt in the various offices he held. He was Alderman of Meriden when the city's government was first organized, and the fifth Mayor of the city, holding that office in 1875 and '76. In 1877 he was elected State Senator. In political principles he was an uncompromising republican. Personally he was a warm friend to those he liked. To young men was he particularly generous. He was ever ready to acknowledge their ability a d further their interests. Those who called him friend found no amount of praise sufficient to express their regard for him.

At a meeting of the Directors of the Meriden Brittania Company held on August 28, the following resolutions were adopted :

Whereas, God, in His wise Providence, has removed by death our president, Horace C. Wilcox, who has been our friend and associate since the organization of this company :

Resolved ; That we record here our high appreciation of his character as a Christian gentleman, of his rare business and executive ability of which this corporation is a monument, and of his generosity and public spirit in all matters pertaining to the interests of this community.

Resolved, That we tender to his bereaved family our heartfelt sympathy in this, the hour of their affliction, that we will attend the funeral in a body, and that the factory be closed on the day of his burial as a slight token of our respect.

Resolved, That a copy of these resolutions be sent to the family and to the daily papers of Meriden, and drafted on the records of this company.

The funeral took place on Saturday, August 30. The ceremonies, which were held from the late home of the deceased, were of a public character. On that day the Meriden factory shut down, and the companies of which he was a director suspended operations. Though Mr. Wilcox was not identified with the Bradley & Hubbard Manufacturing Company, still, out of respect to his memory, the company shut down half a day. The several banks in the city closed at one o'clock, and business generally was suspended. The remains were taken to Westfield for interment. He leaves a widow, two sons and two daughters.

JEWELERS' LEAGUE.

AT the meeting of the Executive Committee, held on Friday, August 8th, there were present Vice-President Snow and Greason, and Messrs. Howe, Bardel and Sexton. Seven changes of beneficiary were granted and the following applicants were admitted as members of the Jewelers' League : Elias A. Cowan, Boston, Mass., proposed by H. Cowan and Wm. Bradford ; Louis Hirsch, N. Y. C., proposed by A. Goldsmith and D. H. Cohn ; Warren Holden, Providence, R. I., proposed by G. W. Hutchison and G. Huestis ; Henry S. Prentiss, Elizabeth, N. J., proposed by G. E. Brundage and J. W. Senior ; Benj. F. Rogers, Louisville, Ky., proposed by C. A. Boynton and S. Kaiser ; Moses G. Roseman, Rochester, N. Y., proposed by A. Roseman and J. M. Morrow ; Edmund Scheuer, Toronto, Can., proposed by S. A. Baldwin and W. H. Demarest ; Edward D. Thomas, San Antonio, Tex., proposed by E. Hertzberg and J. R. Jones ; Edward E. Wilson, Boston, Mass., proposed by P. W. Carter and G. H. Richards, Jr.



A Lampadarium.

THE above cut is an illustration of an improved piano or standard lamp, made by Craighead & Kintz Co., 33 Barclay St. The novelty consists in the substitution for the ordinary lamp of a candelabrum with five or seven branches. The standard is readily extensible, and is a convenient and ornamental piece of furniture for the parlor or setting room. The lampadarium is made in old brass, old silver and oxidized finishes, as are all the standard and banquet lamps manufactured by Craighead & Kintz. This concern makes a line of goods perfectly adopted in finish and design to the wants of the jewelry trade, who are advised when in New York to visit their show rooms at 33 Barclay street.



[From Our Special Correspondent.]

Chicago, August 20, 1890.

Thos. W. Palmer, President of the "World's Columbian Exposition," was a recent visitor to Chicago, and was greatly pleased when it was decided that a special session of the Illinois Legislature would be held not later than September 15. He is reported to have stated that "It is expected that the matter of appropriations will be all settled about September 15, and then the work will proceed rapidly and without a hitch." The fair is not a Chicago Fair, but a World's Fair, and is being recognized as such by all nations, as inquiries at headquarters will prove.

One of the best evidences of the true business man, and a sign that he intends to keep abreast of the times, is the taste displayed in the dressing of his show windows at an opportune time. The truth of the above was forcibly presented during the grand cantonment of the Patriarchs Militant I. O. O. F., recently held in Chicago. I do not believe it possible to find a merchant who did not put forth some extra effort to show his appreciation of the unusual crowds in Chicago at that time. These efforts were by no means confined to any particular trade; as usual the jewelry stores were up to time, and a casual glance in their show cases and show windows revealed a preponderance of Odd Fellows' charms, seals, rings and pins. Most men on a visit of this kind have a desire to take home something in commemoration of their trip, and what is nicer than a pretty watch charm if they need one.

C. J. Olin, superintendent of the Ohio Watch Tool Co., made a flying trip to this city the week of the 11th inst. He remained here several days posting his firm's customers regarding some new tools being brought out, as well as some important changes in their prices. This company will shortly publish a handsome illustrated trade catalogue. They make a specialty of about thirty different tools for watchmakers' use. Particular mention might be made of their drills jeweling tools and a new screwdriver just placed on the market for watchmakers' use especially.

John D. Brown, a jeweler, at 3,142 State street, assigned to F. E. Morse & Son, the diamond importers, a few days ago.

Stein & Ellbogen have just placed a handsome carved sign on the corner of the building, the second floor of which they occupy. The sign is large and a novelty in its way, the center piece being a perfect fac-simile of a Springfield movement. The firm handle a great number of Illinois movement.

The enlarging and beautifying of the general offices of the Elgin National Watch Co., at 76 Monroe street, has at last been completed. As viewed by your correspondent, it would be impossible to conceive of a more desirable suite of offices. The entrance is through massive oak doors into a rotunda with beautiful mosaic tile floors. The offices are on either side. The east end is devoted to the use of Mr. Cutter and Mr. Avery as private offices. The fixtures are all of polished oak with the handsomest of burnished bronze trimmings. Mr. Cutter has been east for some time, combining business with pleasure. As usual at the factory, the demand for the Elgin Co.'s goods is more than it is possible to supply.

Mr. Lapp, of Lapp & Flershem, is still in the east taking a well-merited vacation. He will probably remain with his friends at Plymouth, Mass., until about the 1st of September.

M. C. Eppenstein and wife, who have been spending some weeks among the eastern watering places, have returned. They were highly pleased with their trip.

C. H. Knights, of C. H. Knights & Co., and S. Stein, of Stein & Ellbogen, who have recently been on the sick list, are convalescing rapidly. Mr. Knights has had a severe case of blood poisoning, but we are happy to say his recovery is almost complete.

Giles, Bro. & Co. did, as the saying is, a "regular land office business" during the visit of the Odd Fellows, the stores of this concern being filled all the time. The diamond cutters, polishers and designers of this firm are exceedingly busy getting out handsome new goods for fall and holiday trade. The great demand for the anti-magnetic shield still continues.

The springs of the Elgin Specialty Mfg. Co. are meeting with unlimited success, and the factory is running to its fullest capacity. The testimonials received by this company are of the highest order, and "premier springs" is fast becoming a by-word.

Morse, Mitchell & Williams have changed their location. The quarters lately occupied by the firm were far too small, and larger and more desirable quarters on Wabash avenue have been secured.

Wm. Hoskins & Co., 81 Clark street, reports trade good. This firm manufacture the "Hoskins" patent blow pipes and furnaces, which are well known among jewelers.

The state of business with Lapp & Flershem, the "bee hive" of the jewelry trade, necessitates their keeping their force at work during evenings. This is remarkable at this time of the year.

The increase of business at the factory of F. H. Noble & Co. is remarkable. This firm have been obliged to increase their force and to work overtime for nearly a month past. Numerous orders for medals and badges have been turned out by them, some of which amounted to eight and ten thousand pieces in a single order. This firm have the facilities and a faculty for getting out this kind of work on the shortest notice.

Aluminum for only fifteen cents per pound! How is this, jewelers at large? Prof. Hirsch, of Chicago, claims to be able to produce the metal in its finest form for that amount of money. This is not mere hearsay but an actual fact, from 30 to 60 pounds per day having been produced. Another proof is that two very large buildings erected for factory purposes have been leased, and a stock amounting to over $1,000,000 has been taken quietly. This is not a case of stock peddling by some crank of ingenuity, as Prof. Hirsch is a man of means and well able to handle anything of this kind without aid.

"Always the same way. We are always as busy as we can be from the time house opens till it closes," is the sort of information given at the store of Benj. Allen & Co. A glance around the store verifies the statement every time. The Ackerman Ring Clamp, a little jewelers' specialty handled by this house, is having a splendid sale.

At the Chicago office of the E. Howard Watch and Clock Co., business is reported generally good, several orders for tower clocks having recently been taken.

Happening on a street corner the other day with L. S. Grout, the usual greetings were exchanged, and "Mr. G. is always glad to see The Circular's correspondent." A question about trade came up, and, of course, a good report was given, and then and there friend Grout proceeded to expound some of the reasons for the popularity of the Excelsior Sign Co.'s work. Passing a drug store, a mortar sign would be seen put up so and so, next a jeweler's sign, post sign, or an optician's and jeweler's sign combined, all looking good, not weather-worn apparently and of tasty appearance. "That is the reason our goods sell; they look right and wear right; you do not have to take them in every night or during a storm."

R. E. Kehl, of F. H. Noble & Co., returned some days ago from his trip up the lakes looking very well, though somewhat sun-burned from the little seafaring he had indulged in.

The management and faculty of the Chicago Horological Institute have made some improvements in their course of instruction, and

they now feel it is perfect in every detail. The morning lectures delivered to the students by the instructors on the class of work upon which they are engaged, is proving of inestimable value. A system of percentage marking in different branches of work, even including punctuality, has lately been put in force, the standard being 100 per cent. A monthly report of each student's standing is thus given, so that parents and guardians can tell just what progress their sons or wards are making. This is satisfactory to the students and its good effect is apparent. The strictest discipline is observed in this model school, no gossip being allowed during working hours; all time must be devoted to work. The attendance kept up well during the heated term, and bids fair in September to outstrip the preceding months. Your correspondent was shown some of the work of engraving recently done by the scholars, and it was remarkably fine, that of one of the young lady students being particularly so.

G. A. Harmount, general western agent of the New Haven Clock Co., reports trade heavy, and is looking forward to a large business this fall.

The well-known firm of assayers and refiners, Goldsmith Bros., have just issued a new pamphlet containing hints on the assaying of gold and silver. This little book is gladly mailed to any person applying for one. This firm's representatives on the road are meeting with remarkable success.

Giles, Bro. & Co., ever aware of the wants of societies, associations, etc., have brought out a very neat little gold front button to be on sale at the convention of the *National Electric Light Convention* at Cape May. Suitable inscriptions in raised letters and enamels are on the pin. The design combines an electric car, a motor, arc and incandescent lamp, and in the center is shown the guiding star of all electricians, Ohms law $C=\frac{E}{R}$. This pin will, no doubt, have a ready sale.

Among other objections that have been raised against electrical apparatus, electric street car motors, etc., for general use, has been the inability of those coming within reach of the current to keep their timepieces in a condition to be relied on for proper time. Any number of schemes have been devised, some to a certain degree good and others not. It appears that the obstacle has been removed, in the well known Giles' anti-magnetic shield, invented and manufactured by C. K. Giles, of Giles, Bro. & Co. It is impossible at present to go into details as to a description of this wonderful little article, but those who have used it speak nothing if not good for it, and first class testimonials are not wanting from some of our prominent electricians. In a conversation with Mr. E. A Giles, of Giles, Bro. & Co., your correspondent was assured that the sale of the Giles' anti-magnetic shield had doubled in the past few months.

THE CIRCULAR'S OBSERVER.

CINCINNATI

[FROM OUR SPECIAL CORRESPONDENT.]

CINCINNATI, August 21, 1890.

August is usually a month when everybody who can raise a sufficient amount of money, temporarily absents himself from home and business. This year there has been more inducements offered than ever before, by reason of the very cheap excursion rates of railroads leading out of the city. Notwithstanding this great exodus, trade with the retail jewelers has been comparatively good, considerably ahead of last year during the corresponding time. The wholesale trade is quite active. The salesmen on the road are sending in many and large orders. This season's productions in jewelry seem to be handsomer than ever, and if nothing out of the ordinary happens, and the many sources fulfil good expectations, everything will go on smoothly and prosperously.

Duhme & Co. have again improved their retail salesroom by building a sort of gallery which adds about a third more room, and gives them an excellent place for their engravers; also a place for packing, with desk room for correspondence, etc. Thus the first floor is relieved of all these branches of the business, and is devoted exclusively to retailing.

D. N. La Boiteaux, of Duhme & Co., is one of the pioneers of the jewelry trade in this city, and is full of reminiscences of the early times of the business. He will entertain you for hours relating anecdotes of the early times. He has charge of the silver department of this house, and says that silver, both solid and plated, is meeting with an unusual demand.

L. M. Knepfly, a prominent jeweler of Dallas, Texas, has been visiting our city, and was the guest of Jac. Dorst, of Jonas, Dorst & Co. While here he was escorted by the Sir Knights of Trinity Commandery of this city to Toledo, O., where the Grand Commandery of Ohio held its conclave Wednesday and Thursday, Aug. 20 and 21. Right Eminent Sir Knepfly is Grand Commander of the State of Texas.

Wm. Beck, the prominent jeweler of Sioux City, Iowa, in passing through the city tarried a few days, and was the guest of Geo. Fox, of Fox Bros. & Co.

Herman Goepel, one of the principal jewelers at Port Gibson Miss., on his way through the city remained a day in town, and visited our various manufacturers.

Robert Ernst, of Vicksburg, Miss., has been visiting our various manufacturers for some days.

John Holland, of the John Holland Pen Co, is expected here about the middle of September. He has been visiting the principal points in the West as far as the coast. His letters display an enthusiasm regarding the far west, while his order book shows that he has not been idle, but has kept a good lookout for business.

E. Schweikert, of E. & J. Schweikert, is out on a business trip. He reports a good trade.

Jos. Noterman & Co. are not complaining the least about their business; it is moving along at a good rate. Their display of jewelry is marvellous for beauty of design and finish. Their representative, Wm. Pflueger, is sick with typhoid fever, and Jos. Noterman, Jr., was obliged to take his place. He is out on his maiden trip and is meeting with considerable success.

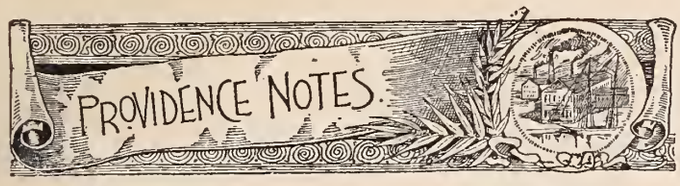
Michie Bros. are much encouraged with the retail trade, and are very busy in the manufacturing department. The have been compelled to add greater facilities in the way of new machinery.

Mr. Bene, of Bene, Lindenburg & Co., is in the South looking after the trade, and Mr. Lindenburg, of the same house, is West.

G. Brashia, bookkeeper for Clemens Oskamp, mourns the loss of his beloved wife.

H. A. Wadsworth & Co. is the style of a firm that was formed a few months ago, and built a factory in the vicinity of the Dueber Watch Case Co.'s old factories in Newport, Ky., for the purpose of making watch cases. They have a number of the employees of the Dueber Co. Mr. Wadsworth was the foreman of the Dueber factory for many years, and is probably one of the best posted watch casemakers in the country.

—The Excelsior Sign & Mfg. Co., of Chicago, Ill., are desirous that all watchmakers, jewelers and opticians should send for their large and illustrated sheet of watch and spectacle signs, watchmakers' tools, foot wheels, polishing-lathes, watch racks, etc. This large illuminated sheet is the finest ever published in the interest of the jewelry and watchmaking business. It will be sent to any address free.



[From our Special Correspondent.]

Providence, R. I., August 21, 1890.

The usual July and August lull in the manufacturing jewelry business has come over a number of the factories in this section, and again, an equal number of the shops have business enough on hand to run the regular time for ten days or a fortnight more, should not another order be received. This hold up in business has not been so marked as in former years, although the season opened fully a month earlier than usual, and all hands concerned will not be obliged to put out so many hard earned dollars as at the same season in past years. The outlook for the fall and winter trade, especially in the southern and western States is very promising, but at present the general run of orders is light and sales are likewise small. With all these facts confronting the manufacturers, as well as the wholesaler, jobber and retailer, trade on the whole has dropped a peg within a short time, and now those shops without brisk business are engaged in making up stocks for the brisk season of September, after which business in general will be rushing until or after the Christmas holidays.

Charles F. Irons, the noted gold emblem manufacturer, of 102 Friendship street, has effected a wonderful improvement in his business premises recently, by enlarging and otherwise altering his office and factory so as to make them more easily accessible to each other. Each successive season brings in its wake such a material increase in the volume of Mr. Irons' business that he continually finds himself in cramped quarters. Indeed, to such proportions has the demand for Mr. Irons' productions grown that it is only a matter of a very short time when the entire building will be brought into requisition to meet the extraordinary requirements of this house.

What becomes of all the patent buttons manufactured, is a question which is frequently asked, and when were the first ones made is another. The manufacture of patent, or separable buttons, was first begun in this city by the firm of Mason Bros. & Pitts, who introduced what was known as as a friction button in 1877. This button was not successful owing to the difficulty in opening, and in 1879 this firm placed another button upon the market which was opened by means of two push arms, and (contemporaneous with one manufactured about the same time by Horton, Angell & Co., of Attleboro,) was the first push button ever made. These two firms did an enormous business for nearly two years, new buttons being patented however, in the meantime, until by January 1, 1881, there were more than 200 different patents in the field, each one involving practically the same principles as the two original ones. About this time the "flopper" or non-separable button made its appearance, Messrs. Fred. I. Marcy & Co. being the pioneers of this new field of button manufacture. The great fault found with the separable button was the danger of losing one of the parts, and when the non-separable was brought out its great advantages were at once recognized, and in consequence the "tip-ups" met with phenomenal sales. Even to the present day, notwithstanding the fact that it has been estimated that enough buttons have been sold to furnish a pair to every man, woman and child in the world more than ten times over, almost every week one or more new (?) patents are granted by the government.

A. S. Southwick, formerly of Vose & Southwick, has again started in business under the style of A. S. Southwick & Co., at 21 Eddy street. Since withdrawing from the former firm he has been with H. H. Curtis & Co., of North Attleboro. The new firm will make a general line of stock plate and sterling silver.

C. T. Leonard & Co. have moved from 35 Point street to 31 Clioffrd Street.

According to the best authority upon the subject, there are 224 manufacturing jewelers in this city, with an invested capital of $4,293,258. In addition to these there are about 80 retailers and watchmakers.

How many firms can boast with George L. Vose & Co., the well-known button, bracelet and chain makers of this city, of having run unceasingly since the first of last January without closing down the factory for one single working day? If indications were wanting to demonstrate the prosperity of a house, surely none could better serve to prove it in the present instance than this continued "turning of the wheels" day after day to keep pace with the demands of the trade. Indeed, so lively have been the orders with this firm the current year that additional help is eagerly employed whenever skilled workmen are obtainable.

During the months of July and August the manufacturers are generally on the lookout for dangerous failures, for in those months come the discouraging reports of an assignment here and another there. This year, however, has been an extremely fortunate one in this respect, only one or two failures being noted, and both of them small. Krugler, Kimball & Co., of New York, had creditors in this city to the amount of about $1,000 or $1,200, and Charles S. Lesser, of Chicago, had liabilities amounting to $1,500 divided among nearly a dozen firms here.

Edward Zimmerman and Beatrain Lenzen have formed a co-partnership for the purpose of manufacturing plush, leather and fancy jewel cases at the corner of Eddy and Friendship streets under the firm name of Zimmerman & Lenzen. Mr. Zimmerman was in the employ of the Gorham Manufacturing Company for more than five years, while Mr. Lenzen was employed by the same firm for upwards of 20 years.

The Novelty Pearl Company have received the last of their machinery, and they are now in fine condition to fill orders. No pains or expense have been spared, all tools, machinery and appurtenances being new, with all the latest improvements added. The firm are fortunate in its combination of talent, Mr. Cook being a thorough toolmaker, Mr. Hill having the reputation of being the best pearl worker in every detail in the country, and Mr. Carl Weis a successful business manager. During the past month the help has been almost doubled.

A case of honesty that is without a parallel in the history of the trade, was brought to the notice of manufacturers of this vicinity during the past month. The Secretary of the Manufacturing Jewelers' Board of Trade received a call one day from a Mr Oppenheim of San Francisco, who introduced himself as attorney for the firm of Peck & Eisenbach, of the same city. This firm, previous to 1878 did an extensive business in the city of the Golden Gate, but were forced in that year to make an assignment for $50,000, with creditors in New England for some $20,000. A settlement was effected on the basis of 40 cents on a dollar. But this was not entirely satisfactory to Mr. Eisenbach, who said that if he was ever able to do so that he should pay every dollar of the firm's indebtedness. After 12 years his intentions have been realized, and his attorney was here for several days endeavoring to discover the creditors and make restitution. Having effected a settlement in full, Mr. Eisenbach has decided to once more venture in the jewelry business, and has formed a partnership to be known as Eisenbach & Beck at San Francisco.

Hearn & Braitsch's New Factory.

For several years past it has been the custom among manufacturing jewelers in this vicinity to erect for themselves buildings suitable for their own particular line of business, and already some twenty or more firms occupy their own structures. Many of these buildings are among the best built, if not the most pretentious,

in the city, and have become recognized indications of the wealth invested in the jewelry trade here.

Twenty-five years ago it was thought that for a firm to remove beyond the limits of a prescribed circle was a certain herald of immediate failure. But this idea has long since become a thing of the past, and now the manufacturers, instead of being confined within a small radius are gradually spreading out, and in every instance the benefits of such a move are easily realized.

Following closely upon the removal of the Gorham Manufacturing Company to its new works at Elmwood comes the announcement that, on October 1st, Hearn & Braitsch will remove to their new building in the same neighborhood. Situated on the southeastern corner of Potter's avenue and Melrose street, within a few minutes walk of three lines of horse cars, stands this latest monument to the jewelry industry, forming a conspicuous landmark for that portion of the city. The building is plainly though substantially constructed of brick and granite, while all of the floors and rafters are of heavy, hard pine. It has a frontage of 40 feet on Potter's avenue, 165 feet on Melrose street, and is three stories in height, thus giving a floor space of nearly 19,800 square feet in the main building. At the southeastern corner of the building is an ell, 30x34 feet, one story high, wherein is situated the engine and boiler-room, from which rises a massive square chimney 80 feet high and about 15 feet square.

In the engine-room are two Harrison-Wharton boilers of 80 horse-power each, and a Harris-Corliss engine of 40 horse-power, which will furnish the steam throughout the works. Every floor will be heated by steam, both from overhead-pipes and floor-pipes leading entirely around each floor beneath the benches. The heating apparatus is so arranged that any section of the shop can be turned on or shut off, as may be desired, without disturbing the remainder of the building.

The system of ventilation is unequalled in any building in this city. All of the sanitary closets, of which there are two large ones on each floor, are entirely outside of the building, and are trapped and arranged in an approved manner. A new and novel feature of the building, and one which causes every one to take a second look at it, is the large triple mullion window frames, the only ones in this city. These windows are arranged after a new idea of the architect, so that by a hinge on the upper third of each sash, that portion drops back at an angle of several degrees, and, while admitting plenty of fresh air, precludes all possibility of rain or snow beating in. But the most pleasing point in commendation of this window is that no draft can blow upon the heads of the workmen. Hill's automatic sprinklers are provided against a probability of fire.

The offices are situated on the first floor facing Potter's avenue, and comprise a front office 45x20 feet, and a private room 20 feet square. The remainder of this floor is utilized for general work, including the heavy drop work, breaking down of stock, melting and rolling. The second floor is where the finishing is done, and is as much separated from the lower floor as though it were in another shop. Here the coloring, burnishing, buffing, spinning and chasing departments are located—each one being in a room by itself.

It is expected that the building will be occupied by October 1st, Hearn & Braitsch using the two lower floors and letting the upper. Mr. Cady, of this city, was the architect, and Mr. N. B. Horton the contractor and builder. The firm own about 67,000 square feet of land surrounding the building. RIDER.

TO TEMPER STEEL.—A preparation is used for this purpose, consisting of ½ teaspoonful of wheat flour, 1 teaspoonful of salt and 2 teaspoonfuls of water. The steel to be hardened is to be heated sufficiently, dipped into this mixture, to be coated therewith, then raised to a red glow and thrown into cold soft water.

Obituary.

ADAM L. FARRINGTON.

After an illness of many months Adam L. Farrington, who for the past four years had been with Leon J. Glaenzer, 80 Chambers street, New York, died from cancer, at his home in Bloomfield, N. J. His sickness prevented him from attending to business, though he continued on the pay-roll of his employers during the entire period.

Adam L. Farrington was born in New York in 1836, and when about fifteen years old was apprenticed to the jewelry trade with George C. Allen, who at that time kept a store on the first floor of 11 Wall street. He remained with Mr. Allen until he was given almost entire control of the business. He did the buying, and attended to other important branches of the business, Mr. Allen placing implicit confidence in his ability.

By this time Mr. Farrington was known among the jewelry trade of New York as an energetic, honest, and able young man. The business of Mr. Allen was not large, and, desirous of increasing his field of labor, young Farrington entered the employ of Ball, Black & Co. He subsequently joined his fortunes with those of Tones, Melvaine & Co, 6 Maiden Lane, importers of cutlery, clocks, &c., who had wide connections which enabled Mr. Farrington to become thoroughly acquainted with the trade throughout the country. He remained until business troubles wrecked the house, when he connected himself with the late firm of Baldwin, Sexton & Peterson. At the dissolution of this house he entered the employ of Le Boutillier & Bride, now Le Boutillier & Co.

In connection with this firm he became widely known. He remained with them for thirteen years, during which time he made annual purchasing trips to Europe. He is said to have had admirable taste in selection of fancy goods, and is also characterized as having been the best French clock expert in the business. In Paris commission houses his judgment was sought and invariably adopted. In 1886 he left this house, and entered that of L. J. Glaenzer & Co. To the last-named firm he is said to have been invaluable.

OSCAR F. LEBKUECHER.

When it became known in Newark, N. J., that Oscar F. Lebkuecher had died on the morning of August 5, many were the expressions of regret heard on all sides, for the deceased was one of the most popular men in the city. He was looked upon as the leader in all social gatherings. His friends, who are legion, say he was a man of unusual generosity and humane feelings. When in sound health he was the life and soul of every gathering.

The deceased's connection with the jewelry trade was not slight. He was a brother to S. A. Lebkuecher, of Krementz & Co. His first venture in the business was as a learner in Krementz & Co.'s factory. After acquiring the necessary knowledge of his trade he was promoted to the post of Southern traveler for the firm. While occupying this position he cultivated a wide acquaintance, and was known all over the South for his gentlemanliness. He also visited the New York City trade for the house, and succeeded in making friends everywhere. In 1887 he severed his connection with Krementz & Co. to join another brother in the leather business, in Spruce street, New York.

EDWARD WILLIAMS.

Edward Williams, familiarly known in the trade as "Ned" Williams, died on Tuesday morning August 4, at his home in Brooklyn. He was in his seventy-second year. Deceased came from Providence to New York about thirty years ago and opened an office at 12 Maiden Lane, where he manufactured badges and medals. His reputation for fine work was pre-eminent. Some years later he was succeeded by Deacon Bros. He then re-started in business with a Mr. Kingnear as E. Williams & Co., on the site now covered by the Western Union building. The firm was subsequently dissolved, and in 1873 Mr. Williams opened an office at 196 Broadway, doing business under his own name. Here he remained until his death. During his career Mr. Williams executed orders for the finest masonic badges. His work was considered unsurpassable. He was quite prominent in masonic circles, and claimed to be the originator of the Mystic Shrine emblem which has been universally adopted.

PARIS GOSSIP.

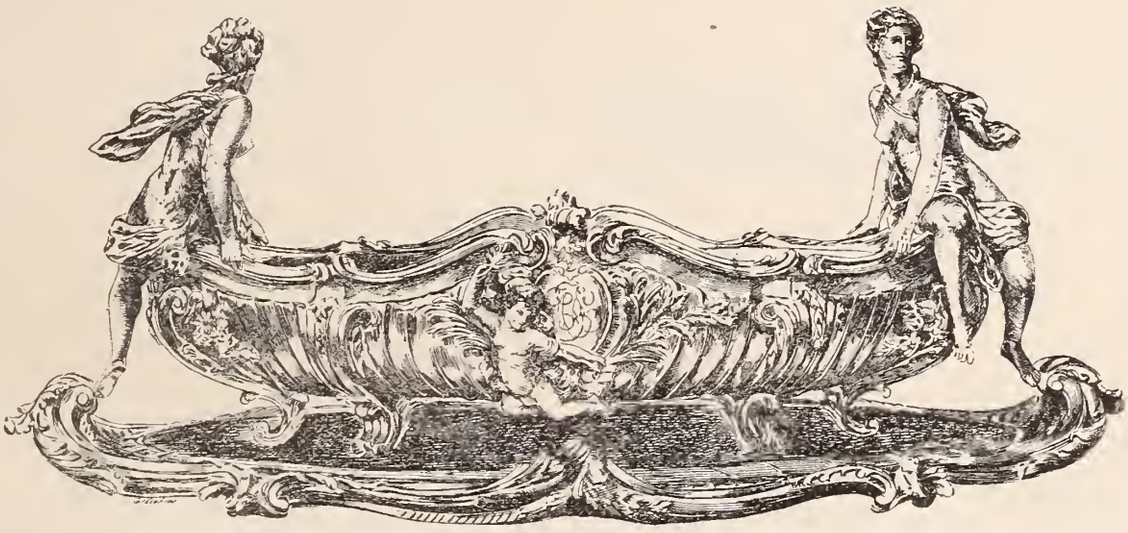
[From Our Special Correspondent.]

SUMMER DAYS COME AT LAST AND PARISIANS FLY BEFORE THEM—A GLANCE AT THE PROVINCIAL SHOPS—SEA SIDE JEWELRY—NOVEL DISPLAY IN SILVER—THE OLD VERSUS THE NEW—PRIZE DAY AT THE PARIS SCHOOL OF HOROLOGY.

Paris, France, August 9, 1890.

Summer days, so long expected, have come at last, and during the last week of July, the staunchest among the *boulevardiers* have felt obliged to leave the French capital. Alone, a floating population of *provinciaux* and foreigners are, for the moment, intrepidly treading on the well nigh melting pavement of Paris streets. They all stare vacantly at the shop windows, and very few of them are courageous enough to walk in.

I have just came home from a little ramble, during which I had a look at a few provincial displays. I also had the opportunity of examining (with great interest), several foreign ones, but of these I could not speak without transgressing the bounds of my gossip. Nothing seems to me more unpleasant than to meet in an old country town, with striking features of its own, the latest Parisian novelties when we run away from the French capital in search of a change. We might expect, after a journey of seven hours in a fast train to see something different from what is exhibited on the Boulevard des Italiens. Yet, thanks to the levelling power of civilization, all that is considered useful or attractive can be seen almost everywhere at the same moment. In fact, articles of luxury seem to reach the most out of the way places quicker than scientific improvements, tending to reduce domestic expenses do. Of course Parisian jewelers and silversmiths, who happen to devise taking patterns, would be sorry to see their success confined to the limits of one town, however large that may be.



SILVER CENTERPIECE IN LOUIS XV. STYLE.

Provincial retailers, anxious to show their customers that choice goods of the latest style may be found at their places, endeavor to keep their displays up to the standard of the Parisian shops. This is what visitors to old country places will never be able to understand. They always expect to find the jewelry and all other articles of adornment thoroughly in keeping with what is left of the ancient features and customs. This peculiar demand has also been sufficiently provided for. Tourists, in quest of articles supposed to have been manufactured in the place by simple minded people worshipful of their forefathers, can easily find what they want. Earrings and brooches of old fashioned filigree work are still on sale at Caen, in Normandie, and *Emaux Bressans*, as Gallo-Roman as they may be, attract the attention of visitors in some of our southeastern towns every year.

Sea side jewelry exhibits, generally speaking, very little originality. The manufacturers of this class of goods seem to think that new patterns would not be likely to pay. Fishing trophies, baskets, boats, tiny sea monsters, etc., in stamped silver, or in carved ivory, have always met with the same success on our western shores, and there does not seem to be any occasion to replace them by more startling designs.

I have just seen at Boulogne-sur-Mer, in a shop window, a pretty brooch, in the shape of a swan, whose body is made of two mother-of-pearl shells, well polished; the head and the wings consisting of diamonds, and the feet (slightly retreating underneath, as in the act of swimming), of chased brown gold.

For a long time I have wished to make a careful inventory of the silver goods exhibited in a certain shop, situated in a middle-class neighborhood. Prompted by this I stopped yesterday for a half an hour or more in front of the show window in question. The display contains samples of all the styles which for the last fifteen years at least, have been approved by the Parisian bourgeois. Although the various articles offered the most extraordinary contrast, and had been placed there, side by side, with no intention of giving original effect, I found the ensemble singularly attractive. The display consisted chiefly of goblets, breakfast cups, serviette rings, salt sellers, coffee sets and liqueur services. Most of the hollow wares were elegant in shape, the curves of the outlines being at once bold and graceful. The decoration, although extremely varied, seldom exhibited any relief. This might lead us to believe that a few years ago we were capable of appreciating beauties which our eyes can no longer perceive. Like blind men who, with their fingers, read books made on purpose for them and consisting of raised letters, we can only admire ornaments in relief work. We must be able to feel them with our hands before we find them thoroughly artistic. On the other hand, how very strange is our present objection to gilt silver. To be sure it does not enhance the effect of repoussé work, but the contrasts obtained with well shaded gilding on pieces decorated with etching are really beautiful. Some of the goblets and cups in this shop exhibit, on a closely scratched background, white and dazzling like snow, pretty flowers and insects in pink, yellow and green gold. The etcher managed by marking the outlines with a slanting cut to give to his work slight appearance of relief. Some cups and saucers are engraved with garden scenes, variously colored with gilt and oxidized touches, on a pink frosted background, etc.

Our prominent silversmiths are still obliged, in order to suit the taste of their customers, to make for table use, articles reminding us of the old styles; but they do it with as much freedom as possible. The surtout in silver, shown in our illustration, was obviously designed in the Louis XV. fashion, yet it cannot be said to be a copy of an old piece. The attitudes of the figures and their rendering are wholly modern. The ensemble is thoroughly harmonious, the outlines are extremely elegant, and all the details daintily finished.

The distribution of prizes to the pupils of the Paris School of

Horology took place a fortnight ago at the Trocadero, and was attended by about 6,000 people. M. Yves Guyot, minister of Public Works occupied the chair of President, M. Jules Roche, minister of Commerce and Industry being unable to come. A long and interesting speech was delivered by M. Rodanet, President of the school and of the Chambre Syndicale de l'Horlogerie, who observed that this year's competition had given better results than any of the previous ones. He added that applications were constantly increasing so that the new school, in the rue Manin, which occupies a space of 600 square meters, would soon be found too small to accommodate all the students. It would then be necessary, he said, to erect a new building close by the other. M. Yves Guyot who was expected to say a few words, in answer to the usual compliments addressed to him as the President of the meeting, painfully endeavored to conceal under a shower of common place witticisms his utter ignorance on horological matters.

Paper weight clocks are rather fashionable. One of these small time pieces consists of a silver corinthian column with a wide onyx base. On the capital of this column rests a sphere with a dial moving circularly, the fixed hand of which is the tail of a monkey standing sideways on the top, and busily biting at a middle sized white pearl. JASEUR.



[FROM OUR SPECIAL CORRESPONDENT.]

A STEADY TRADE, BUT FEARS OF A RELAPSE THROUGH THE EXISTING LABOR TROUBLES.—FINE JEWELRY IN DEMAND.—TASTE IN THE WEARING OF JEWELRY.—A MANUFACTURED EMERALD.—UNEARTHING OF TREASURES.

LONDON, ENG., August 11, 1890.

The unsettled state of the affairs of some of our foreign customers and the usual summer holidays at home have had an appreciable effect upon our jewelry and fancy goods trades. The absence of anything like excitement has been noticeable in all branches, but in place of it we have had what is far more satisfactory, that is, a steady and, to a great extent, a firm trade. Taken all round, I find business in a fairly healthy state.

There is a good demand for the best goods, but the manufacturers of cheaper goods for the seaside resorts are doing most business. Of course, this city is not the seat of the trade in such things, but it is noticeable that more London houses are producing common goods than formerly. Birmingham, however, is not likely to yield much in the production of the cheap lines for which it has so long been famous.

EFFECTS OF LABOR TROUBLES.

I wish our industrial workers could see their way to give our several national industries a chance all together. We seem never to be without a strike in some one trade or another. Sometimes we have two or three concurrently, but always one. And now with a season that ought to be busy, and might have been prosperous, we have a strike that goes to the root of all industries. Of course, you know more about the strike of our colliers than I can tell you. And, as if this was not enough to disturb our trade by interfering with the production of everything we make, as I write there is a strike of railway employees that will seriously obstruct the distribution of our productions.

Fortunately there is a tolerably good understanding in our own particular trade, but with the great conflict between capital and labor that is going on all round us, our traders, manufacturers, factors and retailers are heavily and most unjustifiably handicapped.

FINE JEWELRY IN DEMAND.

Makers of best gilt jewelry are perhaps doing the most trade just now, and that is for export. There is also a demand for the very best goods, and diamond mounters are pretty full of orders; one effect of this is a great demand for smaller stones. Some good parcels have come into London in the last month, principally from the Cape.

In first-class diamond jewelry society has been revelling for some time past. The increased trade in it has by no means been commensurate with the extent to which diamonds have been used, clearly proving that in obedience to "fashion" people possessing those very attractive precious stones have refrained from using them for some time. A very frequent use made of them has been in the decoration of ladies' rich dresses, veiled in delicate white muslin, over which diamonds have been very liberally scattered. I have just heard of jeweled serpents with diamond eyes dotted about a lady's bodice, while two serpents are coiled with heads erect in the position of epaulettes. There is good opportunity for the display of jewels in the continuance of the low bodices which are still worn.

TASTE IN WEARING JEWELS.

Has anyone on your side of the Atlantic written anything in the way of advice as to the particular kind of jewelry that particular types of ladies should wear? We want such a book of instruction here. There would be money in it. Not only money for the author but money for the jewelers afterwards. I think it would increase the use of jewelry. Nearly all ladies could wear jewelry with advantage, if they would only be advised to wear it in proper taste.

A MANUFACTURED EMERALD.

The production of artificial jewels is once more to the front. From the very earliest times the ingenuity of man has been exercised in the effort to produce precious stones equal to those furnished by nature, The gem which has had the greatest variety of imitations is the diamond. The only one, however, with which the greatest success has been achieved is the emerald. A perfect emerald has just been made from the refuse of a gas retort, so that there is just the possibility that science may ultimately succeed in converting carbon into a sparkling diamond. The possessors of stones need not fear the competition, since we learn that values are not likely to be altered much, as the cost of manufacturing the emerald was ten times the value of a similar real stone.

UNEARTHING OF TREASURES

No one knows the rich and costly treasures, the results of the art of the gold and silversmith, that are hidden away in the mansions of some of our old families, and which have not seen daylight for numbers of years. Massive gold and silver antique table ornaments have been so long out of date that I should not be surprised to learn that many families have forgotten that they possess such valuables. The late Lord Dudley was known to possess a beautiful assortment of such treasures, but few persons ever saw them. Lady Dudley has, however, just set an example that is likely to be followed by others. The beauty of her dinner table, when the Princess of Wales and her daughter dined with her recently has been much talked of. The judicious use Lady Dudley then made of her beautiful napery and massive solid silver antiques will do much toward the displacement of those curious odds and ends that have been lately used as table decorations, and the substitution of the antique silver goblets, bowls and dishes by those who possess them. It will be a fortunate thing for a gold and silversmith if this high task can be revived. I do not know any stronger proof of the power of fashion over artistic taste than is found in the fact that the dinner tables of our nobility who possess gold and silver articles of use and ornamentation have for so long been decorated with glass and china receptacles for natural flowers, with fairy fountains, and with fairy lamps.

There may be some return of the old-fashioned use of the precious metals by those who can afford them. I hope there will be, and so give new life to some branches of our trade that have been almost dead. There is evidently a greatly increased demand for silver. In the year ending 31st March last duty was paid on 1,121,550 ounces of silver, while ten years ago—1880—duty was paid on 638,620 ounces only. The latter is the lowest record we have, and as the returns for 1890 approaches very nearly the highest amount (that for 1825), we are justified in hoping for a permanent improvement in this branch of our trade. VIGILANT.

Neglected Problems.*

No. 2.—Part IV.

WHEEL AND PINION GEARING AS LEVERS TRANSMITTING POWER.

By "Excelsior."

(*Continued from August* Circular, *page 58.*)

Resultant and Component Forces.

In the last article we saw that when two or more forces acted upon a material point we could find a single force which would be equivalent to the combined effect of all the others, and the body would act as if only this latter force was applied to it. And this is so, whether all the forces act in the same line or in various directions. When a body remains in equilibrium under the action of several forces, it does so because any one of the forces is equal to the combined effect of all the rest.

Fig. 18 shows a point P acted upon by the three forces L. M. N, in the directions $L\ P$, $M\ P$ and $N\ P$, respectively, as indicated by the arrows. The forces are such that P is in equilibrium. It therefore follows that any one force, say L, is capabie of neutralizing the two other forces, M and N. Consequently if L had its direction reversed, so as to act in the direction $l\ P$, it would have the same

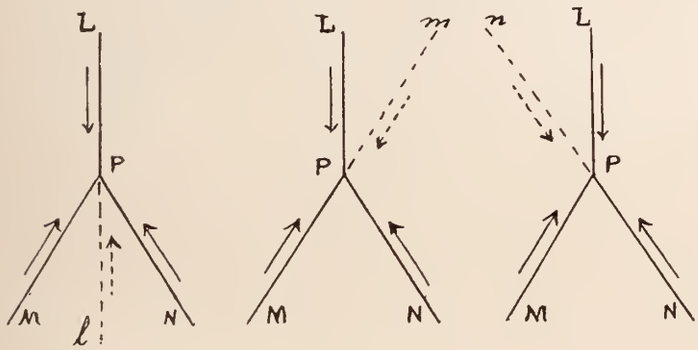


FIG. 18 FIG. 19 FIG. 20

effect as the combined forces M and N. As we have already seen, any force whose effect is equivalent to the combined effects of two or more other forces is called their *resultant*. The force l is therefore the resultant of the forces $M\ N$, and with respect to this resultant the forces M and N are called its components. In the same way fig. 19 shows that the force m would be the resultant of forces L and N, and fig, 20 shows that the force n would be the resultant or equivalent of L and M. In each case, the letter at the end of the line indicates the force, and the line itself shows its direction. In a similar way we may find the resultant of any number of forces acting on a single point, by making a diagram with its lines representing their several directions, as above, provided the body is in equilibrium or remains still while all the forces are acting upon it.

Parallelogram of Forces.

If a body is not in equilibrium it will move. And whatever motion a body or a material point may have under the action of several forces, it will begin to move in the direction of their resultant. But we wish to know not only the *direction* in which the body will move, but also the force with which it will be impelled. To ascertain this, the lines in our diagram must represent not only the directions of the several forces acting upon the point, but also the number of units of force acting in each direction. This we can do by drawing each line with as many units of length as there are units of force acting along that line.

Fig. 21 will illustrate the process. M and N are two forces acting on the point P in the direction $P\ M$ and $P\ N$, respectively. M has x units of force, and N has y units; x and y may of course be any numbers whatever. On the line $P\ M$ mark off a distance $P\ x$, containing x units of length, and on line $P\ N$ measure $P\ y$ having y units of length. These lines $P\ x$ and $P\ y$ now represent the forces M and N, both in direction and magnitude of force, as explained in the previous article. The next step is to draw from the point x the line $x\ l$ parallel with $P\ N$, and from the point y draw the line $y\ l$ parallel with $P\ M$. Then from the point P draw line $P\ L$ passing through the point of crossing l. This line $P\ L$ represents the force L, which is the resultant of the forces M and N, and the portion $P\ l$ contains as many units of length as L has units of force or energy. By measuring $P\ l$ therefore, we will ascertain the magnitude of the force with which the body or point P is impelled in the direction $P\ L$ when acted upon by the forces M and N. This figure bounded by the lines $P\ x\ l\ y\ P$ is called *parallelogram*, and theline $P\ l$ connecting its diagonally opposite corners is its *diagonal*. The construction shown is termed the *parallelogram of forces*, and the rule for finding the resultant of two forcesby its means is stated thus :—

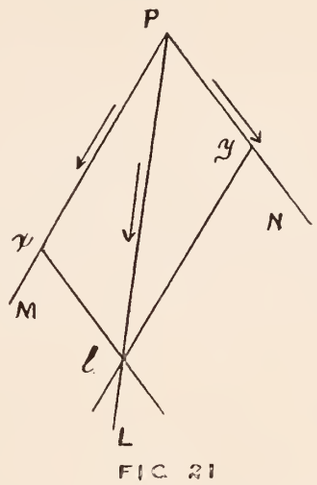


FIG. 21

"If two forces act on a point, and if lines be drawn from that point representing the forces in magnitude and direction, and on these lines as sides a parallelogram be constructed, their resultant will be represented in magnitude and direction by that diagonal which passes through the point.

The resultant of three or any greater number of forces can also be ascertained, but by different methods. As it is not necessary for our present purposes to explain the process it is omitted. The workman who feels interested in the subject will find full particulars in any of the standard treatises on Mechanics, and its study will repay him for his time.

Composition of Velocities.

The rule for the *composition of volocities* is the same as that for the composition of forces above stated, by merely substituting the word "velocity" for "magnitude." Then, if the point P has at any instant a velocity $P\ x$ in the direction $P\ M$, and there is communicated to it a velocity $P\ y$ in the direction $P\ N$, it will move in the direction $P\ L$ with a velocity represented by $P\ l$, *i. e.*, by the number of units of length contained between P and l. In this construction, the units of length of the lines Px, Py and Pl represent units of velocity instead of force as described when explaining the parallelogram of forces. We can thus ascertain what will be the velocity of a body when acted upon by two forces, if we know the velocity each force would give to the body and the direction in which it acts. For example x might be 3, y 4, and l 5, and the unit of velocity might be *inches* per second. Then the velocities given by M and N would be 3 and 4 inches per second respectively, and the body would have a velocity l, of 5 inches per second, as we would find by measuring from P to l.

The foregoing will serve to show that in Mechanics there is no

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loss or destruction of force, that it is converted into motion and does work by overcoming friction or other resistance, and that no matter how complicated or haphazard the arrangement of the forces acting upon a body may seem, their effect can be accurately ascertained. The workman will also see, by this time, that even the most obscure and intricate parts of the subject of forces are not so difficult to understand or to practice as he may have supposed. With ordinary intelligence, nothing is required but careful attention and a little clear thinking.

In the illustrations just given of the action of forces, the body has been free to move in any direction that the forces may impel it, and it will actually move in the direction of the resultant of all the forces. In gearing, however, the wheel is *not* free to move in any direction but is only allowed to move in one, and that is a forward revolution upon its axis or pivot. The described method of resultants is therefore not applicable in many cases, but we must find the forces by calculation from the lengths of the lever arms, and the solution of the problem of oblique action by the lever consists in finding how long a lever arm acting directly would be equivalent to the given arm which acts obliquely. But before discussing that point we must introduce a new force and consider some of its applications.

Action and Reaction.

Action and Reaction always equal. This new force is *reaction*, and it is called into play whenever there is a mutual action between two bodies. If you push your hand against a wall with a certain force, the wall resists the pressure with an equal amount of force; so, also, if you pull upon a hook in the wall, the hook resists with an equal force. This resisting force is *reaction*. Reaction is always equal and contrary to action, *i. e.*, the mutual actions of two bodies are always equal in amount and opposite in direction. This is always true, whether the bodies are in motion or at rest.

This force is not a mere theoretical abstraction, but is an element necessary to be known when calculating forces, as will presently be seen. Although not mentioned before, it has been frequently illustrated in the foregoing figures. In every lever there is a certain amount of pressure or force exerted upon the fulcrum. The fulcrum must therefore exert an equal amount of force (reaction) against the lever, for it is obvious that otherwise the lever would not be supported by the fulcrum. Again, in the case of cords supporting weights, we found, by inserting a spiral spring into the cord and noticing how much the spring was elongated in different circumstances, that the tension on the cord was the same whether it hung directly downward from the hook or passed over a pulley, and also

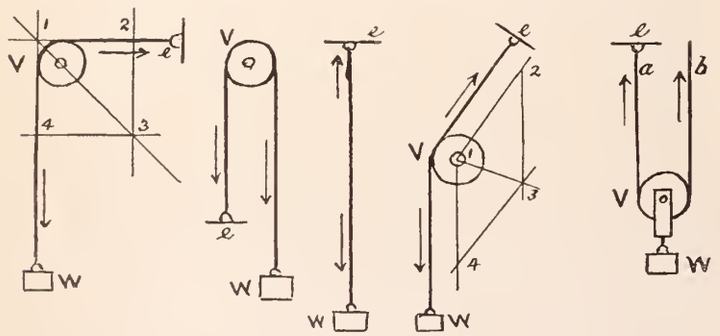


FIG 22 FIG 23 FIG 24 FIG 25 FIG 26

that in the latter case, the tension remained the same no matter what the relative directions of the weight end and the hook end of the cord might be, *i. e.*, in every case the reaction of the hook was equal to the action or pull of the weight at the end of the cord. To further illustrate this, figs. 22 to 25 inclusive, show the weight *W*, supported by the cord, whose end is secured to the hook *e*. In some of the figures the cord passes over a pulley *V*. But the tension on the cord is the same in each case, therefore the action of *W* is balanced by an equal reaction at *e*. The cord is stretched by two equal forces, an action and a reaction, each equal to *W*, and it is therefore said to sustain a tension *W*.

In fig. 26 we will designate the power or force required to support *W* by the letter *b*, and the reaction of the hook *e* by the letter *a*. We know by experience that the force of *b* must be one-half of *W* in order to sustain the weight. Therefore the force of reaction *a*, must also be one-half of *W*, and the weight *W* is sustained by two equal forces *a* and *b*, acting upward as shown by the arrows, one pulling at each end of the cord, and the two combined supporting the weight *W* and the pulley *V* from which it is suspended. There is no gain of power by this arrangement, however, for although the force *b* need only be one-half of *W* in order to *sustain* the latter, it will have to move two feet upwards in order to *lift W* one foot, because the force *a does not move*, and the force *b* has to move for both *a* and *b*. What is gained in force is lost in distance or space traveled over by it, as has been frequently explained in the preceding articles.

Direction of the Pressure on Bearings.

Before proceeding, I will show from figs. 22 and 25 how to ascertain the direction in which the tension of the weight or motive force acts upon the axle of the pulley *V*. It is done by the method of the parallelogram of forces already explained. The better way would be to draw our parallelogram as a separate figure, like fig. 21. But we can draw it on the other figures by finding a point from which the two forces act. In fig. 22, we extend the line representing the cord above and below the pulleys. Then the line *e* 1 shows the direction of the pull of the hook *e*, and *W* 1 the direction of the pull of the weight *W*. As the two forecs, *W* and *e*, are equal, we measure equal distances 1 to 2, and 1 to 4, Then from 2 draw line 2, 3, parallel to 1, 4, and from 4 draw 4, 3, parallel to 1, 2. These lines cross at 3, thus completing our parallelogram. Now draw the diagonal from 1 to 3, and this line shows that the pulley is drawn along 1, 3, towards 3, the line 1, 3, being the *resultant* of the two forces, or the action and the reaction, acting upon the pulley. In fig. 25, we draw lines parallel to *V e*, and *V W* from the center of the pulley. These lines represent the directions of the forces, and from their crossing at 1 we measnre and proceed as before, finding that the pulley is drawn in the direction 1, 3. The same method will show the direction in which the motive force presses a pivot in a watch, by drawing from a point lines showing the directions of the forces, (which will be the directions of the acting tooth and pinion leaf from the center,) and giving them the lengths corresponding to the amounts of those forces, which lengths will of course be the semi-diameters of the wheel and the pinion. Then complete the parallelogram as before described and draw its diagonal.

(*To be Continued.*)

Compliments of the Month.

Cincinnati, O., August 15, 1890.

There is one thing we want to say about your paper that cannot be said of any other jewelers' paper, and that is this—your paper reaches more foreign trade than any other journal. We have received many requests for our catalogue from foreign countries, all referring to The Jewelers' Circular.

Oskamp, Nolting & Co.

Waldron, Ind., August 7, 1890.

Enclosed find currency $2, for which please send The Jewelers' Circular another year. So long as you keep up its standard of excellence I shall continue to be its friend. No jeweler can afford to be without it. Any number is worth the price of the whole volume.

Ira A. Chapman.

Greenville, Tenn., July 26, 1890.

I read much but The Circular beats everything. I feel lonesome without it.

Isaac O. Harrell.

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Mechanical Ocular Defects.

Their Nature, Cause, Correction and Relations to Functional Nervous Diseases.

Edited by C. A. Bucklin, A. M., M. D., New York.

[The aim of the author is to produce a clear and thoroughly practical course of instruction on the subject of "mechanical ocular defects," which is entirely void of useless technicalities and within the easy comprehension of every thinking studen without his having had any previous technical or mathematical education.]



CONVERGENT STRABISMUS or common squint is one of the prominent symptoms of relative hyperopia which has attracted much attention during the past thirty years, and its etiology has probably been the subject of more speculation than any other subject in the entire field of opthalmology. The disturbing question appears to be: "Why is it that not 1% of hyperopic persons look cross eyed, and 90% of all cross-eyed persons are hyperopic?" In this popular article I take the liberty of ignoring many theories and stating the views which concur with my experience.

A person having relative hyperopia is in this unfortunate position—he cannot focus both eyes for any point at which he can comfortably fix them; he consequently must see the object *indistinctly*, *see it double*, or he must develop convergent strabismus. The only reason why all persons having non-falcultative relative hyperopia do not look cross-eyed is that they do not know how to do it without seeing double. I cannot accept the reasoning lately advanced that the co-existence of partial amblyopia, with the hyperopia in one eye, is a favoring factor in causing the hyperope to develop convergent squint. If the individual possesses bi-nocular vision he is as seriously annoyed by diplopia, as is the individual who is not amblyopic in either eye.

The condition leading to convergent strabismus of the ordinary variety is the disturbed relations which exist between fixation and accommodation. Hyperopia may exist in various degrees without disturbing these relations seriously; under these circumstances it does not cause convergent squint. Hyperopia, however, makes the requirements for unusually strong efforts of the accommodation necessary, and in this way disturbs the relations between fixation and accommodation to such an extent that they cannot work well together. If these disturbed relations do not exist, amblyopia in one eye combined with hyperopia will play no part in producing the trouble. Naturally, when convergent squint develops, amblyopia in one eye will determine which eye will be the squinting eye.

The individnal having relative hyperopia, which of necessity means that he has bi-nocular vision, finds that he cannot see distinctly with both eyes. In learning to squint he fixes one eye on an observed object, and rotates the other eye strongly in; by so doing the accommodation in the fixing is greatly increased, as well as in the deviated eye. Now, providing he can ignore the visual impression of the squinting eye he will not see double, and perfectly clear vision will result at the point of fixation. I believe that persons with perfectly sharp vision in the squinting eye learn to ignore the annoying visual image of the squinting eye as easily as those who are slightly amblyopic in the squinting eye, but still have bi-nocular vision.

I admit that congenital amblyopia of one eye is very common in persons having hyperopia as well as in those not having hyperopia. This may, in many cases, account for the amblyopia of squinting eyes. I, however, do maintain that an eye which never was amblyopic does become amblyopic through squint. Mental suppression of the visual impression of one eye is a faculty which some individuals can acquire, and which others cannot. Non-facultative hyperopes who can learn this faculty of suppressing the visual impression of one eye learn to look cross-eyed. Those who cannot learn it find that strabismus produces annoying symptoms, and consequently do not cultivate it.

Independent of any other causes, a person will not develop the common form of convergent strabismus as the result of partial amblyopia in one eye, or any abnormal deviations in the angle formed by the visual and optical axes of the globe. The disturbance between fixation and accommodation must be of such a nature that they cannot work together, before any person will develop the common variety of convergent squint. While hyperopia is the cause which most frequently disturbs these relations, still there are other disturbances which make it possible for common convergent squint to develop with *slight myopia*, emmetropia and all degrees of hyperopia, except when existing in excessive degrees. A slight but permanent paresis of the accommodation or the internal recti muscles in a young person brings about the necessary conditions for the development of squint quite as perfectly as hyperopia.

The following case illustrates lucidly some of the above statements: Mr. G., twenty-one years of age, wears strong convex lenses given to him when a child, owing to the serious asthenopic symptoms he complained of. Without glasses the distant vision of his eyes when tested together is $\frac{20}{50}$. If I cover the right eye with a card, his vision raises to $\frac{20}{30}$ in the left eye. If the left eye is covered, the vision in the right eye raises to $\frac{20}{20}$. In either trial the eye which is covered with the card assumes a position close under the nose. He uses, when one eye is covered, the faculty of convergent strabismus for the purpose of producing acute distant vision in the fixing eye. He had never learned the art of ignoring the visual image of one eye without seeing double. Had not his asthenopia attracted attention and led to the adoption of strong convex lenses for constant use, he would have learned by some means how to suppress the visual impression of one eye, and would have developed in time permanent convergent strabismus. Had he learned to perform this act of visual suppression with only one eye, this would have been the squinting eye. Had he learned to suppress the visual impression equally well in either eye, he would have developed "*alternating*" squint. Had one eye been amblyopic he certainly would have learned for his own convenience to do his squinting with the poor eye, and he would certainly have fixed with the eye which was not amblyopic. The simple reason for these deductions is that this would be the only way in which he could obtain acute vision.

The latest authorities try to ridicule the idea that the squinting eye becomes amblyopic because its visual impression is constantly ignored, and mention in support of the statement the fact that bi-nocular vision is not lost in congenital cataract. Neither does the acuteness of vision necessarily decline because the eye is excluded from the visual act by the presence of cataract. To my mind there is no similarity between the two cases. Bi-nocular vision will usually continue to exist if it is possible, no matter how indistinct the vision of one eye may be. When bi-nocular vision has become once established bi-nocular fixation is more agreeable than mo-nocular fixation, although one eye is decidedly more amblyopic than it is in confirmed cases of convergent squint. If I can draw any conclusion from the facts I observe in nature, I am forced to the following conclusion regarding the partial blindness which always exists in the squinting eye of one who has not alternating squint. The eye is in many cases amblyopic before the squint develops. The vision of a formerly perfect eye may become quite as amblyopic as the result of strabismus as any other squinting eye which was affected with congenital amblyopia.

Alternating squint exhibits some truly interesting peculiarities.

Persons thus afflicted develop converging squint in such a way that they are able to use either eye as the fixing eye, and when so doing are able to entirely suppress the vision of the other eye. The moment the fixative act is changed from one eye to the other, acute vision returns to the fixing eye. In many, if not all of this class of cases, all attempts to demonstrate the existence of bi-nocular vision are complete failures. I admit that this class of cases demonstrate that visual impressions can be suppressed in an eye without the eye becoming amblyopic, which reasons in favor of the amblyopia in simple squint being congenital. I believe the truth will be found in the following statement: Continual supression of the visual impression of an eye leads to the development of amblyopia, while the interrupted suppression of the visual impression does not of necessity produce amblyopia. Certain persons have the ability to suppress one retinal image at such times as they find it convenient to do so, and resume bi-nocular vision the moment the conditions are such that they experience no difficulties from it. Persons certainly exist, who, at the word of command, can make use of or discontinue bi-nocular vision. Such cases cause the routine-prism enthusiasts very many annoying experiences. They see double, or they do not see double—just as the fancy strikes them. They are entirely independent of any prism combination as to whether they shall or shall not see double. I have long since come to the conclusion that the search in this class of cases for faulty muscles is a useless one. They can overcome their muscular difficulties by giving up bi-nocular vision better than you can overcome the same effects by the use of prisms.

The *amblyopia* found in one eye in cases of confirmed squint, whether congenital or resulting from the squint, is not, as a rule, curable or improvable. I have seen children during the first weeks of the existence of convergent squint, who had an acute, distant vision in both eyes. They wore convex lenses for a time, and retained acute vision. At a later period they discarded their glasses. Several years later I examined these children, and found them amblyopic in the squinting eye. In the face of the facts as they really exist, I am not open to conviction by any species of argument that the amblyopia found in one eye in strabismus is of necessity congenital.

Convergent strabismus is an active effort to produce distinct single vision, which is readily cultivated by those who have difficulty in practicing bi-nocular vision. No person can be taught to look cross-eyed, if he can see distinctly without doing so. The subject of convergent strabismus will be continued in our next.

CORRESPONDENCE.

Lafayette, Ind., July 21, 1890.

DR. BUCKLIN, New York:

I have made an engagement to see a man in a few days, who claims to have strained his eyes about three years ago while riding through the mountains, and his pupils became so small that he could not see. The doctor told him to use atropia, and he has been using atropia every night for three years so that he can see the next day. I have not seen him. What shall I do? An immediate reply will greatly oblige. Yours truly, H. C. KACHLEIN.

ANSWER.—This condition is called myosis. The condition described, in which the size of the pupil is so minute that it is detrimental to vision independent of any visual obscurity, is one I have never met with. I cannot find a similar case among the literature which I have at hand.

The pupils become very small as the result of certain diseased conditions of the brain and spinal cord, but never so small as to interfere with vision. If the case described has no central visual obscurity, the vision is greatly improved by the use of atropia and very bad without. I think an artificial pupil would make the pupils of the desired size. There is a first case to every class of cases, and it is quite possible that this is a very unusual one.

Several letters have been received asking about the Hydrobromate of Homatropine Grains, one to eight to one fluid ounce of water, as a substitute for Sulphate of Atropia to paralyze the accommodation, stating that it was reported as being quite as effective, and only lasted twenty-four hours. Dr. Noyes says, in his work just out: "With this my practice does not concur. For dilating the pupil cocaine is better than homatropine, while to paralyze the accommodation where there is reason for doing so we have no substitue for atropia." My experience concurs fully with his statement.

School of Optics.—The next class will probably form Sept. 10th, at half-past two. Those wishing to join will please apply as early as possible, otherwise it is difficult to agree on the date selected.



MINNEAPOLIS, Minn., Aug. 18th, 1890.

The jewelry trade is, like everything else hereabouts, perched upon the crop fence, which is never quite secure in these degenerate days until the last field has been traversed. Yet jewelers are leaning strongly toward the busy side and I already note the increase of trade in the luxuries a man is apt to indulge in when the pleasant chink of silver is heard in the land.

The most important movement of the month was the incorporation of the "Reed & De Mars Jewelry Manufacturing Company," to do business in Minneapolis, in the phraseology of the articles "to manufacture, buy, sell and traffic in jewelry, watches, clocks, optical goods, watchmakers tools, watch and clock materials, and all such other wares and merchandise as are usually comprised in and connected with, and appurtenant to the general trade in jewelry." The capital stock is $100,000 with $37,500 paid in, and the company's indebtedness is limited to $50,000. The incorporators, all Minneapolis men, are Robert Reed, C. Wright Davison, Charles E. Braden, Louis D. de Mars and Fred. W. Spaulding. Business was begun the 15th of August.

Another company was incorporated at Des Moines, Iowa, the "Von de Heidt Self-Winding Watch Company," who are sanguine to the degree of thinking that their self-winding watches will very soon entirely supersede all others in use. The principle upon which the watch works is a rotary motion given a weight while carrying the time piece in one's pocket, a bonanza for absent-minded people. The patent was taken out in 1885, but the inventor was somewhat of a crank and the watches have never been manufactured. The location of the factory has not yet been decided upon, though the capital stock has all been subscribed, but it will be in Iowa. Des Moines jewelers have the watches on exhibition and are reported as enthusiastic over them, saying they're the acme and that the days of key and stem-winding watches are ended.

Two Western jewelers have had it pretty rough this month. Nels. C. Neilson, of Grafton, N. D., for some time has shown signs of derrangement, and at last barricaded himself for three days in his store, fearing robbery and refusing every one admission. Several attempts were made to dislodge him, but Neilson defied capture with a revolver which he several times fired at the interferers. On the 4th of August, Mayor Chandler and about a hundred citizens went to the store and made another effort to get him to come out. The only reply was a pistol shot. Then one of the fire department quietly forced a way into the store, and jumping over a partition, landed upon Neilson's prostrate body. He was dead. Neilson was a Dane, a bachelor of forty, always considered miserly and eccentric, and was one of the unfortunates who are said to have left no relatives or friends.

F. S. Wise has opened a jewelry store at Rhinelander, Wis.

Fred. Pinches will open a jewelry store at Belle Plains, Minn.

The stock of B. Whiteford, the jeweler, of Three Rivers, Minn., is advertised for sale by the curator. HENDERSON.

Fashions in Jewelry

A Lady's Rambles Among the Jewelers.

TASTE IN FINE STONES.—GOLD JEWELRY IN NEW FORMS.

If their appearance is in response to a popular demand, it is evident that a taste prevails for large, fine, unique stones.

*** *** ***

The king, or queen of these (for the sex of stones has not been determined by those who write and talk about them) is a 77 karat diamond—a yellow gem from the African mines and remarkably brilliant. It is rose cut but left square, and is mounted in its own brilliancy with the exception of three small white stones set at each corner. In this state it is valued at $20,000. If it were pure white it could not be purchased for less than $150,000.

*** *** ***

Some superb pearls have been recently shown. They were all mounted alike, in circlets of diamonds, with a jeweled loop for a chain or ribbon. The pearls were as large as filberts and each was of a different tint. The darker were especially rich in warm shades.

*** *** ***

Colored pearls are extensively used. In brooches of geometrical forms and interlacings, small colored pearls are set to a great advantage.

*** *** ***

Three fine diamonds, one pure white and the others a little off-color, and all of the same size, and set as a clover leaf with a jeweled stem, is the ingenious way in which three exceptional stones are combined.

*** *** ***

A new way of setting large cabochon rubies and sapphires is to nestle them, pointing outwardly, in outspread diamond wings. Two or three tiny diamonds are perched on the top of the colored stone.

*** *** ***

Something has already been said of portrait heads cut in translucent semi-precious stones, and mounted in precious stones. Types of luxurious historical periods have been copied in this manner. These figures admit of jeweled head dresses, ruffs and breast ornaments which are elaborately copied in jewels.

*** *** ***

As an instance of the familiar use of large stones, are shell back combs of the plainest types, topped at short intervals by diamonds as big as the little finger nail. A variation of this sort of startling magnificence is the use of sapphires, each set in a circlet of diamonds.

*** *** ***

A river of light for the neck is a string of large diamonds. Tiaras, on the other hand, are like woven moonbeams, such as Titania might have worn; these seem to intimate that they are not only for dowagers.

*** *** ***

Diamond epaulettes are comparatively new. These take the form of bows and buckles, and sometimes have the effect of Psyche wings. Parures of diamonds are all fashioned so that they can be broken up and used as separate pieces. In their original shape they form festoons that are clasped on the breast and shoulders by diamond flowers.

Watches are the daintiest of trinkets. From a jeweled bow knot hangs a diamond globe with its South Pole sliced off, and here the hours are marked off. A chatelaine is made of flat graduated sapphires The watch is of blue enamel set in a marquisate circle of diamonds with three diamond trefoils, and their stems reaching over on to the enamel.

*** *** ***

A mourning watch seen is pretty enough to be a consolatio n The chatelaine is made of oblong blocks of onyx set in tiny threads of gold. Each block has a flower-like form in diamonds. The watch is an onyx globe with a girdle of diamonds.

*** *** ***

Jeweled insects have lost nothing in favor. One of the prettiest pieces of the jeweler's workmanship recently seen was a silver bee, the body of which was a colored diamond.

*** *** ***

Knife edge bracelets with overlapping ends have two or three jeweled flies or bees marking the boundaries. In the less expensive bracelets the moonstone takes the place of the diamond, but the form is still the bee, wasp or fly.

*** *** ***

Another ornament given to these overlapping bracelets is formed by filling the space between the two lines with stones. Thus there will be a row of topazes, tourmalines, ruby spinels or moonstones, with a small diamond on each outer edge.

*** *** ***

There is a sudden and marked popularity in flower jewelry of deep tinted gold, usually uniting a diamond in the center. The pelargonium is a new form and adapts well to the style.

*** *** ***

This same jewelry is found in metallic tints. These tints, however, are particularly noticeable in the folded tape jewelry, which, in the form of bows, chatelaines, ribbons and sleeve buttons, is very popular.

*** *** ***

There is a poverty of imagination in the sleeve buttons that are made to resemble pearl buttons. On the other hand, the lusterless white enamel buttons are exceedingly pretty for dog-day wear. Buttons suggest yachting by gold anchors, or racing by spurs and horse-shoes. Gold fleur-de-lis are a familiar ornament.

*** *** ***

A pair of odd sleeve buttons are of pale green enamel with a light tinted cabochon ruby in their centers.

*** *** ***

New brooches have the form of white plaques in which are tiny mediæval forms in red and blue enamel, with tiny diamond centers, or across the center are two red lines enclosing a row of diamonds.

*** *** ***

A cluster of white thistle down, sparkling with tiny diamonds on its silken spikes above diamond leaves, is one of the prettiest ornaments of the season. Another design is a carefully worked-out thistle leaf of gold with the bloom of amethyst quartz.

*** *** ***

Small orchids, with a single diamond dew drop or a tiny diamond tendril, are used as scarf pins.

*** *** ***

An onyx bar used as a mourning brooch, has the upper side marked with small gold projecting bars, in the end of each of which is a diamond, and each supports a swinging diamond.



A Complete History of Watch and Clock Making in America.*

[By Chas. S. Crossman.]

Number Forty-six.

Continued from page 62, August, 1890.

PHILADELPHIA CLOCK MAKERS.

PETER STRECH AND THE LIBERTY BELL AND CLOCK, ALSO THE OTHER BELLS AND CLOCKS WHICH HAVE BEEN OR ARE IN INDEPENDENCE HALL.



BOUT THE first clockmaker that we find any history of in Philadelhhia is Peter Strech, who made his name famous to future posterity because he made the old State House clock that was to keep time for an event which was to mark the birth of a great nation, and on whose bell should first be sounded forth to the new world the notes of liberty. We find on page 32 of the history of Independence Hall, the following: "It was determined March 11, 1753, that they would have a large clock which should strike on the bell in the tower, and should have a suitable dial plate to show the hours and minutes." It was ordered to be made in Philadelphia, for Mr. Morris says in his letter of March 10, 1753, "We expect it will prove better than any from England, as when they put it out of their hands they are done with it, but here the workman would feel very mean if he did not exert his utmost skill as we do not stint him in the price of his labor." Peter Strech was the man selected to make this clock. He had a shop at the corner of Chestnut and Front streets, and was probably the leading clockmaker of the Quaker City at that time. Of his early history we are able to learn but little. Just how long it took him to make the clock we cannot tell, or when he put it up or how long it run on approval before he received his pay for it, but in 1759 we find that he was paid £494 5*s* 3½*d*, or nearly $2,500 for the job. The movement was located in the main building immediately under the roof, and was connected by rods with the dials at either end of the main building. These dials were supported by an ornamented brick case in base relief in imitation of the regular high case clocks of that day. Peter Strech had the care of the clock until 1762, after which we cannot find his name mentioned.

He was succeeded at this time in the care of the clock by Edward Duffield, another Philadelphia clockmaker. Just how long Peter Strech lived after the date just mentioned we are unable to find out. He dropped out of sight here as far as any definite information is to be had. The first directory in Philadelphia was published in 1783 and his name does not appear, and it is more than likely that he died long before. In March, 1775, David Rittenhouse, the astronomer, (and clockmaker as well), whom we shall have occasion to speak of at some length in another connection, succeeded upon his own petition to the Assembly, in which he stated "that Duffield no longer desired the position, and that as he (Rittenhouse) had charge of the timepiece belonging to the Philosophical Society, which is kept in the observatory in State House Square with the astronomical instruments for adjusting it, he conceives that it would not be too inconvenient for him to take charge of the said public clock."

In 1781 some alterations were made in the tower, and "Liberty Bell" was lowered to the inside of the tower. A new bell was placed on the roof under an open wooden belfry, to sound the hours and to ring an alarm in case of fire. The old clock remained entirely undisturbed until 1812, when the city counsel obtained permission from the State Legislature to remove a portion of the ends or wings of the building, and reconstruct it suitable to the uses of the times. No great changes were made in the clock, however, beyond changing the position of the dials somewhat. On the 19th of June, 1818, the city of Philadelphia purchased the building from the State for seventy thousand dollars, as they wanted to preserve it as a landmark of the event which had made it historical. The old clock was getting somewhat unreliable, and the demand of the times was for a clock keeping closer time than the old one probably had ever done, but it was not till a public discussion on the subject took place in 1828 that any action was taken toward securing a new clock. The testimony was certainly not very flattering to the old clock. Isaac Lukins had the care of the clock at this time. One gentlemen said, referring to Mr. Lukins and the clock he had charge of, said: "He is a very good keeper but has the care of a very bad clock. If there is anything proverbial it is the badness of the clock in the State House; it is an excusing and not a regulating clock. It is a clock which affords no rule to go by, but a rule not to go by. Everybody knows it will never go right." This debate resulted in an order for a new clock being given to Mr. Lukins in March, 1828, also the construction of a new steeple for the building, and a new bell to be cast by John Wilbank, which, like its first predecessor, had to be cast three times. The result of the third trial was a bell with a deep, fine tone, which was familiar to the inhabitants of Philadelphia for half a century. Its weight was four thousand two hundred and seventy-five pounds, and cost $1,923.75. Mr. Lukens made a clock at a cost of $2,000, which proved to be a very reliable one, and had four dials made of ground glass in the steeple, and when these dials were lit up at night it was considered a great novelty. The liberty old clock of Peter Strech's, and the bell which replaced liberty bell in 1781, were by permission of the City Council in 1828 sold to the Roman Catholic Church of St. Augustine, on North 4th street, with the right reserved to the municipality to reclaim them should it be so determined by the Council. The city, however, never had the opportunity, as they were both destroyed by the burning of the building in May, 1844, during the riots, a time in which the Roman Catholic churches of the city suffered severely.

After the alterations in 1828, liberty bell remained in the upper stories of the brick tower on a framework, and was rung only on special occasions. On July 8, 1835, while it was being tolled during the passage of the funeral procession of Chief Justice Marshall through the streets of Philadelphia, a crack appeared in the bell from eight to ten inches long. This crack was further enlarged while ringing the bell February 22, 1843, rendering the bell useless ever after. The bell still remains in Independence Hall, an object of interest to all sightseers who visit that historical Mecca. It was exhibited at the New Orleans Exposition in 1885, and attracted throngs of people at the various depots on the trip from Philadelphia to New Orleans and return.

In 1876 Henry Seybert, a citizen of Philadelphia, anxious to do honor to the city in the Centennial year, offered to present the city with a new bell and clock for State House steeple, much more grand in proportions than those then in use. The new bell weighs 13,000 pounds, but the tone is low. This bell, like both of the bells that preceded it, was cast three times, being cast by Messrs Meneely and Kimberley, of Troy, N. Y., and has since done duty in the tower; but it has never been as resonant as the bell of 1828. There was not much complaint made about the old clock made by Lukens, but the city could not very well accept a new bell and refuse a new clock. Mr. Seybert's generous offer was therefore accepted, and the new clock was constructed by the Seth Thomas Co., of Thomaston, Conn. This clock is a very large and fine tower clock with a variation of only two seconds a month. The old State House bell and clock was removed to Germantown and placed in the town hall, and occasionally the denizen of the central part of the city, if he happens to be in Germantown, is greeted by its sound once so familiar to every inhabitant of the Quaker City.

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(Written expressly for THE JEWELERS' CIRCULAR.)

Watch Oils.

By C. DIETZSCHOLD, Director of the Impero-Royal Horological School at Carlstein, Lower Austria.

With comments and additions by WILLIAM F. NYE, *of New Bedford, Mass.*



THE OIL problem is an important one in horology; the watch which must keep going for a year or more with a proportionally trifling store of energy, naturally requires that everything likely to cause opposition be reduced to a minimum, and, before anything else, the watchmaker's aim must be to reduce friction. As is known, friction is caused by the roughness of the surfaces of bodies moving upon or within eachother having a tendency to interlock, and since this takes place more perfectly with bodies in repose than when in motion, it is more difficult to start a body in motion than to keep it moving. For this reason natural philosophy distinguishes between "friction of repose" and "friction of motion." The former is about 1½ times as much as the latter.

And, now, what are the functions of the motor of a watch—for instance, a watch the spring of which causes the balance to make 18,000 vibrations per hour or 432,000 each 24 hours? For each vibration the train is set once into motion and stopped again; with one winding, therefore, 432,000 times. The proportions of the friction are consequently not at all favorable, and the urgent necessity exists to diminish them to the smallest possible quantity.

Not regarding the fact that all parts of the watch must be worked thus that the surfaces on which friction takes place are to be polished as smoothly as possible, etc., also lubricants are used which when placed on the surfaces most exposed to frictions, fill its cavities and thereby prevent the interlocking of the small unevennesses of the two surfaces rubbing on each other. So as to prevent the pushing or crowding away of the oil, its consistency must increase with the degree of the pressure brought to bear. The watchmaker, therefore, takes for ordinary clocks as well as for steeple clocks the pivots of which have to resist a strong pressure, a thicker oil than for watches.

NECESSARY QUALITIES OF OIL.

When we examine oils of equal consistency it will be found that one has a fattier feel than another; by taking a little between the points of the thumb and forefinger and rubbing them together, we find that this occurs more easily with some kinds of oil than with others. The lubricating capacity of the oils, that is their capacity to diminish the friction under otherwise similar proportions, differs with the different kinds of oil. The consistency and lubricating capacity are two very eminent qualities of all oils, no matter whether they are intended for lubricating machinery of 1,000 horse power or the smallest lady's watch.

While a machine is oiled and cleaned repeatedly, this operation is performed comparatively seldom with the sensitive time-measuring machines, and corresponding with this fact the demand is made of a watch oil, that it shall for a long time keep unaltered. To this is to be added another demand: that the oil, when it does alter in certain cases, shall not form decomposition products, which, if acids attack the material (brass and steel) or stop the watch.

We furthermore demand of a watch oil that it retains its consistency as much as possible in the different temperatures to which a watch is generally exposed. It must consequently not become firm in cold weather nor increasingly fluid in heat, and must at the same time retain the same lubricating capacity.

The faults generally possessed by oils are their becoming resinous, formation of acid and evaporation. These may be inherent to them, because, generally speaking, it may be said that vegetable oils become resinous (dry up), animal oils acidify (turn rancid), and mineral oils evaporate—be it well understood, however, in the course of time—some earlier, others later. Now it is the duty of the oil manufacturer to use such oils that remain unaltered as long as possible, and to avoid those parts which accelerate the decomposition. The above mentioned faults, however, may also be due to the processes of manufacture. Thus, for instance, vegetable oils are treated with sulphuric acid to discolor them, etc. The removal of the free acid contained in the oil, after having been bleached in this manner, is performed only with difficulty, and is hardly ever done to perfection.

We enter the watchmaker's workshop, and find that his oils are in many instances either ruined by him himself or else are used incorrectly, whereby they lose their former good qualities, which would not be the case if they had been treated with that care required by so important an object as watch oil.

KINDS OF OIL.

Let us next pass a cursory glance over the most important kinds of oils used by the watchmaker, and we will find that three kingdoms of nature, the animal, the vegetable and the mineral, contribute toward them.

We distinguish between fat and lean oils. To the former belong the bone oil, neatsfoot oil, sweet oil; to the latter, the fish and the mineral oil. In the vegetable world we obtain oil from many different fruits and seeds.

The vegetable oils are combinations of oleic, palmetic, stearic and other acids. They are divided into (*a*) non-drying oils such as sweet oil, nut oil, rape seed oil, etc., and (*b*) drying oils such as linseed oil, cotton-seed oil, hemp oil, etc. The non-drying oils decompose in the course of time and become sticky and opaque. We have, for short, designated this with "becoming resinous." Some, such as walnut oil assume a strongly acid character, and thereby rust the pivots quickly. At any rate, an acid is generated with each decomposition of oil.

The drying oils cannot be considered at all here. The olive or sweet oil is the best. The first obtained product, the so-called virgin oil, answers best. It is open to the objection, however, that it solidifies in cold, and for this reason the uncongealed part is pressed out in the cold. In order, next, to preserve it at a more uniform consistency, it is mixed with almond or hazel nut oil, which does not congeal very easily. The latter oil is subject to the least change of all seed oils.

Olive oil is rarely used in horology, because: 1. It is difficult to obtain a pure article; the commercial oil is most generally sophisticated with peanut oil, etc. 2. Not all kinds of olives furnish an equally useful material, and the manufacturer would have to count on always obtaining an oil of the same quality, even after he had succeeded in discovering an unadulterated product.

The other vegetable oils, such as almond, rape seed, hazelnut, walnut, sunflower, cottonseed and others, are of a consistency much inferior to olive oil, and we therefore desist from describing them in detail. The most important watch oils are derived from the animal kingdom. Animal oils and fats contain as impurifications admixtures of albumen, mucilage, etc., the presence of which always causes a decomposition in a short time, and it is necessary to remove them. Neatsfoot oil and the fish oils are used most for our purposes, and we omit the mention of the less important ones. Large quantities of the former are manufactured in the United States and are made from beef feet, which are finely crushed and boiled. These feet being articles that can always be obtained in a fresh state, and the oil being very fatty and fairly insensible against cold, if prepared during cold weather, many country watchmakers manufacture their own supply

Dennison recommends to shake it at a low temperature in a bottle with a similar quantity of water, until a homogeneous white emulsion is produced. After standing, the finest oil of the mixture collects first on the surface; it is skimmed off and used for watches; that which collects subseqently may be used for lubricating large clocks. If rightly prepared, neatsfoot oil is one of the most valuable watch oils, by reason of its being very fatty and fairly insensible to cold.

Concerning the *fish oils* there are a number in market, each of which is praised as being the *ne plus ultra*. There is, for instance, blackfish oil, an almost odorless article, which withstands a high degree of cold; next, dolphin oil, void of smell; swordfish oil, which is said to be better than dolphin oil; menhaden oil, frequently used for oiling watches, although it has a disagreeable, fishy odor; it is sometimes mixed with neatsfoot oil, but recognized by its odor.

Spermaceti oil is produced by pressing spermaceti; it is said to decompose with difficulty, and finally we have the lard oil, which does not congeal in the greatest cold. It is said that a mixture of it with petroleum makes an excellent lubricant for fine machinery.

The *mineral oils* evaporate in the course of time, and become thinner fluid with increasing temperature, but do not decompose. The Caucasian is best, as it does not, like the American, contain paraffin, which remains after the petroleum has evaporated. The commercial brand, called oleonaphtha I., is said to be best. An admixture of mineral with other oils is easily recognized by treating the fluid with either caustic potash or caustic soda, whereby the organic oil saponifies, while the unsaponifiable mineral oil remains. As it neither becomes rancid nor resinous, it might be expected that it would be eminently useful in horology; expressions of this tenor are occasionally published in the horological press.

THE PREPARATION OF WATCH OILS.

Watch oils are manufactured from the crude oils by different processes. The following are usually adopted for refining organic oils: 1. The removal of the solid portions when congealed, the operation being repeated until oil is obtained that will not readily freeze. 2. The stearin is removed by placing strips of lead in the oil, which is continued until it ceases to precipitate. 3. The resin and mucilage are taken out by washing with alcohol and afterward with water, and the oil is finally filtered through animal charcoal. Generally speaking, the processes consist of cleaning the oil by filtering through cotton blotting paper or animal charcoal, and shaking with water; some propose to expel the water by boiling; this method, however, is objectionable, as the heat introduces the germ for decomposition into the oil. Again, benzine has been recommended; this fluid, however, generally contains a trace of acid, used for purifying it, and it thereby introduces a dangerous re-agent. Others take alcohol; as this has the advantage of combining with the particles that have begun to decompose, it is perhaps the best re-agent to be employed.

For de-acidulating, many shake the oil with a solution of bicarbonate of soda, and then placing it aside to settle. If the former contains an acid it combines with the soda; carbonic acid is liberated and escapes. If caustic soda lye is used, the already decomposed oil is saponified.

EXAMINING WATCH OILS.

The watchmaker uses a short process for examining watch oils. He tests them whether—1. They are free from acid; 2. they are given to becoming resinous; 3. they draw away; 4. they resist cold.

1. When testing an animal or a vegetable oil he knows that this will decompose sooner or later, and he is interested in ascertaining how long it will keep good. He therefore places some of it on a brass plate and into sinks worked into a brass plate, and observes when it begins to turn green. It must be mentioned here that oil does not act as quickly on a polished surface as on one roughened with emery paper; beside this, not all kind of brass behave in the same manner—the more copper it contains the more easily it becomes green. An action can be produced in a few days by heating the plate. The heat, however, should never exceed 140° F. Be it parenthetically remarked, that with crude neatsfoot oil the green color shows already after 3 hours, while with watchmakers' oil this occurs only after 62 hours.

2. The inclination to become resinous is found by placing a thin film of oil on a glass plate and exposing it to the air. For accelerating this, the glass plate is placed in a warm room. When placing another plate upon the former, both will stick together if the oil contains resin.

3. Oils of little body are given to spreading. Thin fish oils are highly inclined to this, and they are therefore mixed with thicker. Every watchmaker knows the ill effects of a thin oil—it draws away from the pivot holes and gets around the arbors and into the pinions, thereby causing the brass wheel to wear away the steel pinion. It is indeed a peculiar fact that in the friction between a hard and a soft material, the latter wears the former. In this case it is owing to the dust entering into the pores of the brass, which thereby becomes, as it were, a composition file, using the dust as a grinding material.

For testing its consistency a sample of the oil is placed on a brass plate, which is then slightly warmed. If the oil runs it is too thin, and must be mixed with one that is thicker. The degree of fluidity differing very much, there are certain grades established by permitting the oil to escape from a pipette. Thinly fluid oils require less time for doing this than those of thicker body. Refined rape seed oil is taken as standard; if, for instance, an oil is of the second grade of fluidity, then a certain quantity is twice as long in escaping as the same quantity of rape seed oil. When trying this test, the influence of the temperature on the oil is noticed at the same time.

As above remarked, the demand is made of an oil that it should preserve the same degree of fluidity in all temperatures, and the objection is urged against the mineral oils that they become thinner with an increasing temperature. This fault may not be very objectionable, because at a low temperature the balance spring becomes more rigid and strong—the balance vibrations, therefore, are accelerated; the thickening oil retards them, that is, neutralizes the action of the temperature on the balance spring. The consequence is readily imagined, and watches lubricated with an oil the fluidity of which depends to a certain extent on the degree of temperature, perform to greater satisfaction than those that are less influenced. This, however, is a hypothesis, and may or may not be true. It is well when testing a certain sample of oil, in how far its fluidity is influenced by the temperature, to remember that some oils require a longer time before they assume the degree of fluidity corresponding to the degree of temperature than others, and therefore results in this direction obtained within a few hours are practically worthless.

4. When testing the specimen concerning the degree of cold which it can withstand, an artificially produced temperature is used at which the oil will congeal. If the oil becomes solid, then the stearin, paraffin, etc., have not been entirely removed. This fault must not occur in oils of an organic origin, manufactured in a watch oil factory, because it is so easy to remove these admixtures by pressing the oil at a low temperature, etc.

The conditions governing a watch movement are entirely different from those of a machine. Watch pivots move slowly in proportion to those of the machine, and the pressure is less. The changes from heat to cold and *vice versa* are frequent; the direction of pressure in watches changes constantly. Acids continually exert an influence upon the watch oils, especially those of an organic origin, because the exhalations emanating from the wearer's body are always charged with acids. It is evident, therefore, that experience is of the utmost account here, and for obtaining a definite opinion as to the quality of an oil we must ask the watchmaker to give his. His judgment, however, can be deemed to be reliable only when he has considered all the points bearing on the subject.

CASE AND USE OF OILS.

A matter of great importance is the keeping of the oil. It must

not be exposed to the light, and be kept as much as possible from contact with air and acids. It is not advisable to keep the oil in a glass vial and to expose it to light. Air, dust and impurities are to be kept from the oil; it must, therefore, be always tightly stoppered, and a drop is to be taken from the vial only with the oiler and placed into the oil cup, and used for lubricating. The oiler is best cleaned with pith, but not with the fingers, which perspire constantly more or less.

As small a quantity of oil as possible is to be supplied. There are watchmakers who believe that the pivot hole sinks are to serve as oil sinks. Their principal purpose is to decrease the length of the pivot hole, which for thin pivots must be smaller than the thickness of the plate. No oil whatever must stand in these sinks, but there must be an oil ring only between the pivot and the side of the hole. Good watchmakers use only exceedingly little oil. The escapement parts also must be oiled, because the friction at the pallets, etc., is of great influence upon the vibration angle of the pendulum or balance. Thin oils are apt to draw away here, and no oil, except of a certain body, will remain here.

Before a timepiece is oiled, clean the pivot and pivot holes carefully. If they still contain old oil, it is impossible that a fresh quantity will long remain in it without being ruined. But not only old oil, but the agents used for cleaning and polishing must be carefully removed with a pegwood, etc.; these agents often contain acids, and sometimes their presence exerts a discomposing influence upon the oil. In spite of all precautions it may occur that every kind of oil is spoiled in a watch or clock, if either of them is surrounded with re-agents that exert such an influence. There is, for instance, the tannic acid, which is always present in a case made of oakwood or on a small watch case covered with leather. The emanations from these have a baneful effect on any kind of oil.

Due stress must also be laid on the percentage of copper scales in the brass of the plates, which increases in quantity according to the degree of heat at which it has been poured; the action is not always alike when brought into contact with an oil. For this reason the oil of different movements will thereby not turn green at the same time, and the watchmaker can judge of the qualities of an oil only after he has used it on a number of watches.

Concerning the oil question, oil manufacturers only have until now treated it, finally winding up their literary effusions with proving conclusively that the article they manufacture is the best in market. But few opinions have been expressed by watchmakers. The author has purposely abstained from mentioning names or kinds of oils, in order not to be considered a canvasser for certain grades.

AMERICAN WATCH OILS.

BY WM. F NYE.

I THANK you for affording me the opportunity of reviewing in advance of publication Mr. Dietzschold's article on watch oil, written for the JEWELERS' CIRCULAR, and very gladly comply with your request to make some remarks and criticisms upon it, adding some facts from my page of experience as a manufacturer of an oil of so much importance to horologists. Mr. Dietzschold's remarks on the requirements of a watch oil from the hands of the manufacturer are interesting and judicious, and must be truly instructive to students of the many horological schools now established, though he has much to say of the old-time methods of preparing oils from nuts, vegetables, and the synovial fluids from bone and membrane of animals, out of which the world has grown, and which the modern watch and clock manufacturers have long since discarded. We of the new world get down to the practical, and adopt the expansive way of doing things. Note our many immense and magnificent watch factories; and, with that inquiring mind born of the westward march of Empire, we have made the ocean yield up a treasure in the oil of fishes, commensurate with the vast modern production of time-measuring machines over the slow and wasteful methods of the past; and, although Mr. Dietzschold "purposely abstains from mentioning names," I cannot avoid just here doing justice to the venerable and worthy pioneers, Ezra Kelley, of New Bedford, Mass., and Caleb Cook, of Provincetown, Mass, for discovering and establishing the superiority for delicate watch wheels, of the oil which is taken from the head and jaw of the black fish—a large fish of the whale species—usually met with in schools by our American fishermen. That this oil is superior in every requisite as a watch and clock oil, the fact of its gaining, on its merits alone, for the past sixty years, a reputation so world-wide, is proof conclusive, and high honor to these two men of enterprise and genius, both now upon the border-line of 100 years of earth life, and both still remarkably active and vigorous. Another palpable proof of its merits is that all the watch and clock factories in this and other lands are using this oil, with results never attained with other oils in the adjustment of modern watches.

Doubtless the more humid climate of Europe admits of the use of such oils as Mr. Dietzschold describes, made from the olive, neats foot oil, rape seed, etc., but it has been fully demonstrated that the drier and more varied temperature of this country soon destroys their co-efficiency; and watching closely, as I have these past twenty years, the condition of watches and clocks imported from Europe, I find the importer experiences a deal of trouble in having to remove the decomposed fatty acids from the oils used upon them, and protests have to my knowledge gone out from New York importers to their correspondents in Europe not to allow other than American oils to be used on the instruments sent them.

Four years since, from an extended trip over Europe, I brought with me samples of all the oils I could gather in the salesrooms and work-shops of the thirty seven cities I visited, with the express purpose of testing their merits by the practical methods we apply in the manufacture of our own, and my previous knowledge of these oils containing fatty acids that exert rapid corrosive action upon metals was fully confirmed.

Of mineral oils we need not here speak. They are worthless in the jeweler's work-shop, save upon the oil-stone, as such as are of sufficient fluidity to use on watches evaporate and dry too rapidly. And now, dropping further notice of oils mentioned by Mr. Dietzschold, and scarcely used or known in the thirty immense watch and clock factories of this country, let us speak further of the "Jaw" and "Melon" oil of the black fish (which is superior to the porpoise oil for watch use).

Its efficiency lies not in the quantity of greasy matter it contains so much as in its exceptional smoothness, its fine texture (if you will allow me the term), and almost absolute freedom from the stearin found in all other oils. In fact this oil, taken entirely from the head of the fish, may be termed, from its extreme fluidity, their *oil in embryo*, and thus is specially adapted to fill the pores of the fine pivot surfaces and bearings to which it is applied, while it seems to possess just the measure of viscosity needed to prevent its "creeping," as the watchmaker would say. Next, it is indecomposable under the influence of great heat and remains fluid far below a zero temperature; and, just here, I may not do better than to quote what we say in our circular to the trade: "The fine fish jaw oils, from which alone our oils are prepared, will scarcely congeal under an Arctic cold, hence we seek and establish our refinery in a Canadian climate, for a more perfect and natural method of refining, and by our new processes we are enabled to extract from the oil the minute particles of stearin, without the use of heat or acids—so detrimental to any lubricant—and thus leaving it in its native purity, and retaining its remarkable non-drying and enduring properties." We find great diversity of opinion as to the perfectibility of even this best of oils yet discovered. Grest viscosity is regarded by some as all important, while the majority lay great stress on the cold test as one essential point. But giving attention to one point to the exclusion of others is not practicable. The proof of any oil

supplied for watch use is its actual use upon watches carried in the pocket, for it is a well-known fact among horologists that a watch will not keep the same measure of time on a number of persons.

Science yet despairs of defining the varied properties of oil from the different species of fish. When the scientists can tell us whence the rose and the lilac gather in the spring-time their beautiful colors and grateful perfume, they may be able to tell us more than we now know about oils.

Electric conditions, varying temperature of body and difference in motion affect the watch; and so it is with the properties of oils from the animal, vegetable and mineral kingdoms—and the inhabitants of the vast oceans, that forage amid immense schools of sardines and herrings, that migrate to cold, northern seas, and in warm climes feed upon the animulculae, sunfish and squid that a tropical sun awakes to life.

Oxidizing Silver.

Mayence, Germany, July 16, 1890.

To the Editor of the Jewelers' Circular:

Kindly communicate in your "Workshop Notes" the best proceeding for black oxidizing of silver goods, and oblige, Yours truly, MARTIN MAYER.

THE JEWELERS' CIRCULAR cheerfully complies with the request of the correspondent, but must say that a full explanation of the several methods to be described would exceed the limit of a "Workshop Note," and the technical editor has therefore kindly essayed to describe several methods in his usual lucid and felicitous style.

Every worker in the precious metal knows the liability of silver to become tarnished in an atmosphere containing sulphurous emanations, sewer gas or sulphuretted hydrogen; in the language of the day this tarnishing is called "oxidizing," although erroneously so, because the silver enters into a chemical combination with the sulphurous gas and forms a sulphide of silver. The object assumes a dark lead-grey color, and in order to restore the brightness of the silver, pickling must be resorted to. This proclivity is taken advantage of for causing an artificial oxidation upon the silver surface, by covering this latter with certain reagents that will produce such an effect. Such a reagent must naturally contain an easily decomposing sulphur combination, which the silversmith has in the so-called liver of sulphur (German *Schwefelleber*, sulphide of potassium), which is so easily decomposed that it parts with hydro-sulphide even at a simple exposure to air. The workman can readily prepare it himself by mixing two parts of sharply dried potash with one part of pulverized sulphur, and then fusing the mass in an iron vessel. This potassic sulphide can also be purchased in any drug store; it is a crumbling, liver-brown mass, and has to be kept in firmly closed receptacles on account of its liability to decompose. When a silver article is to be coated entirely with sulphide of silver, the former must first be thoroughly cleaned from all filth and grease with soda lye; it is then rinsed in water and at once immersed in a bath of the sulphide of potassium solution. Action begins at once, and the coating adheres according to the state of dilution of the bath. The course of the process must not be hastened too precipitately, however, as under such circumstances the coating of the sulphide will adhere loosely, and drops off when slightly touched. (The writer ascertained by experiments that a much more firmly adhering coating may be obtained by exposing the article for some time to an atmosphere of humid sulphurretted hydrogen gas). It may be well to remember that the more dilute the bath is the more tenaciously adheres the "oxidation;" the formation of this is hastened by warming the fluid.

When coated sufficiently with sulphide of silver, the article is taken out of the bath, quickly rinsed in water, and then dried; if the work has been conducted correctly the piece must be of a uniform grey color. Ornamentations may then be executed showing the brightness of the silver; this is effected in two ways—mechanically and chemically. By the former, the layer of the sulphide of silver is completely removed with a graver, so that the color of the metal underneath is made to appear. By the second, that part of the design which is to appear bright is executed with a goose quill dipped in moderately strong nitric acid, which changes the sulphide of silver into a sulphate, that can be washed off by dipping the article for some time in boiling water, after the drawing of the design is finished. The sulphate of silver dissolves with difficulty in water.

It is not easy to produce entirely faultless designs in this manner, and especially do the contours occasionally lack sufficient sharpness. Sharper designs are obtained by coating the places of the silver which are to remain bright with asphaltum varnish, and, after drying, dipping the article into the potassium-sulphide bath. When the action is satisfactory the article is rinsed and the asphaltum lacquer removed by dipping in benzoin.

By tracing the design directly upon the article, experiments have also been successful; a highly concentrated solution of sulphide of potassium in water was prepared, and so thickened with sufficient thick mucilage solution that it could have been used for writing and drawing. The designs upon the bright silver were executed with a quill and brush; the article set aside for 24 hours, then heated so that the dried mucilage mixture either dropped off of itself or separated by gentle tapping. If the fluid is thickened sufficiently with the mucilage solution, the outlines of the tracings will be of very great sharpness, and the dark grey sketches on the bright silver will make a very agreeable effect.

There are two distinct shades in use, one of which is produced by chloride, which has a brownish tone. For this it is only necessary to work the article with a solution of sal ammoniac. The other, described in the proceeding, is of a much more beautiful tint.

The nice blue-grey to black tone, the characteristic of sulphide of silver, is obtained by this sulphur bath; but if the silver is alloyed with much copper the color will be different, inclining more to dead black, and not so handsome. When, therefore, an oxidation simply produced by sulphide of silver is to be obtained, the article must be heated to a red heat for some time, so as to oxidize the copper on the surface to a proportionally great depth; this oxide is then to be removed by pickling twice or three times. If the color of the oxidized silver is to be very dark, passing into a velvety black, dip the article, before entering the liver of-sulphur bath, in a solution of proto-nitrate of mercury. The article assumes thereby a fairly white color, metallic mercury separating upon its surface which unites into an amalgam with the silver. The solution of the proto-nitrate of mercury is produced by dissolving mercury in the cold in nitric acid, so that a little mercury remains in excess; this solution is to be kept in a closed bottle, upon the bottom of which is a little mercury. When the article is next immersed into the sulphide of potassium bath, a thicker layer of a mixture of sulphide of mercury and sulphide of silver, of a velvety black tone, is produced.

The silver oxidation may also be shaded by chemical re-agents—for instance, the oxidized article is dipped into a fluid consisting of 10 parts of sulphate of copper, 5 parts of sal ammoniac and 100 parts vinegar, which imparts a warm brown color to the bright places of the silver. Elegantly colored designs may be produced in this manner by a skilful manipulation of the process. For instance, ornamentations are first traced upon the bright silver surface with asphaltum lacquer; the article is next oxidized in the liver of sulphur baths, after which the asphaltum layer is removed; next it is dipped into the solution of proto-nitrate of mercury, and again oxidized, when black designs upon a blue-grey ground are obtained. Now, brighten certain places of the silver surface, dip the article in the above stated copper solution, and you will have the bright spots oxidized brown. Care is always necessary that the oxidations already produced are not ruined by the succeeding ones, and it is always necessary to coat such finished places with asphaltum lacquer.

TRAINING SCHOOLS FOR JEWELERS.

THE PARIS SCHOOL FOR APPRENTICES IN JEWELRY—ITS HISTORY AND METHODS.

PART I.

NO ONE will deny that a man ought to know his own language well enough to make himself thoroughly understood by his fellow-countrymen, and to be able to understand them. If this be a truism, could we not apply the same term to the following statement: An artisan in decorative lines ought to know not only the principles of decoration, but, as far as possible, their various applications to his own special work, besides being conversant with the newest processes, and being provided with the newest tools and instruments. Yet, if practical means for doing quick and good work are more numerous and more perfect in our day than they used to be, how many can boast of making the most of them, even in branches of industry whose productions must be the most elegant and refined?

It is well known that our forefathers, the goldsmiths of the Renaissance, and even those of the last century, knew every branch of their art, from hammering to *repoussé*, and from modelling to chasing. How can we expect our artisans to do anything worthy of their calling if they have no knowledge of drawing? This glaring truth struck the mind of Parisian jewelers about twenty-four years ago, in 1866, when their Chambre Syndicale first assembled, and they at once decided upon the opening of an art school especially for apprentices in jewelry, gold and silversmithing. Among our artisans, all who were the first pupils of that *Ecole de Dessin* acknowledge that they were particularly favored. The Director of the *Conservatoire des Arts et Métiers*, highly pleased at the idea, allowed the school to be established in a large and comfortable hall, in the left wing, where it remained for eight years. In 1874 it was politely dislodged, as important alterations were found necessary to make room for an increase of collections. Besides, it was urged that other Chambres Syndicales might complain about the preference given to jewelers etc. Our art school was then hurriedly removed to a modest ground floor on the back court of an old house in the neighborhood. Yet, while there was nothing very attractive in the place as far as the room was concerned, the school seems to have been particularly prosperous during the twelve years it remained there, at 339 Rue Saint Martin. More than two hundred pupils at the time attended these drawing and modelling classes, which considering that they were only divided into two sections, coming in turn every other day, makes an average superior to one hundred young fellows being taught at the same time. Of late years this number has gradually diminished, until it is now reduced to half of what it used to be during the most prosperous period. This falling off is not due to a growing indifference on the part of the apprentices or their parents; neither must the manufacturers be blamed for it. The reason is simply that numerous art schools have been established in all the districts of Paris, and if we consider that our apprentices have to hurry home to dinner after their day's work, and hurry back to the special school, open from 8 to 10 P. M., we must admit that those who live at a distance (which is the case with most of them) will prefer to attend art clasess in their immediate neighborhood. In fact, it ought to be a cause of wonder that as many as a hundred and ten (that is fifty-five every night) should still attend the art school. In the free classes of the different districts they only learn drawing in a general way. They can obtain there no practical, no technical teaching; and how could it be otherwise? The pupils of these schools are apprentices in the most varied branches of industry. Hence the most intelligent students prefer a substantial special teaching, which alone will make them proficient in the trade they wish to follow. The others, who take the general training, will, no doubt, if they take an interest in what they learn, acquire a refined taste, and be able to appreciate elegant forms and ornaments, but not being trained for the special work they have to do, they will show less facility. All these reasons prompted me to admire the good sense of the parents and masters of the little fellows (some of them under twelve) whom I saw busy working the other night when I visited the Jewelers' and Silversmiths' Art School. The new place, 2 Passage de la Reunion, on the second floor, where they moved three years ago, does not seem more comfortable than the other one, and although the President of the Chambre Syndicale has been repeatedly urging manufacturers in the jewelry and silver lines to send all their apprentices, I fail to see how any newcomers could manage to find room there. The whole space has been made the most of, numerous partitions being arranged across the room, leaving between the benches but a narrow passage for the professors to move about. The pupils are seated in front of these partitions or of the walls, at a proper distance from the models they have to copy. The two teachers, M. Fossey and M. Lefebvre, although of a different temperament (perhaps because of it) are well qualified for their calling. The former is a man of consummate experience in all questions of pedagogy, who has been a professor at our Art School ever since its opening. He endeavors to inculcate in the pupils regular habits; he rebukes the careless ones in a quiet way and shows them how easy it is to do neat work. The latter, who is a talented sculptor, tries to



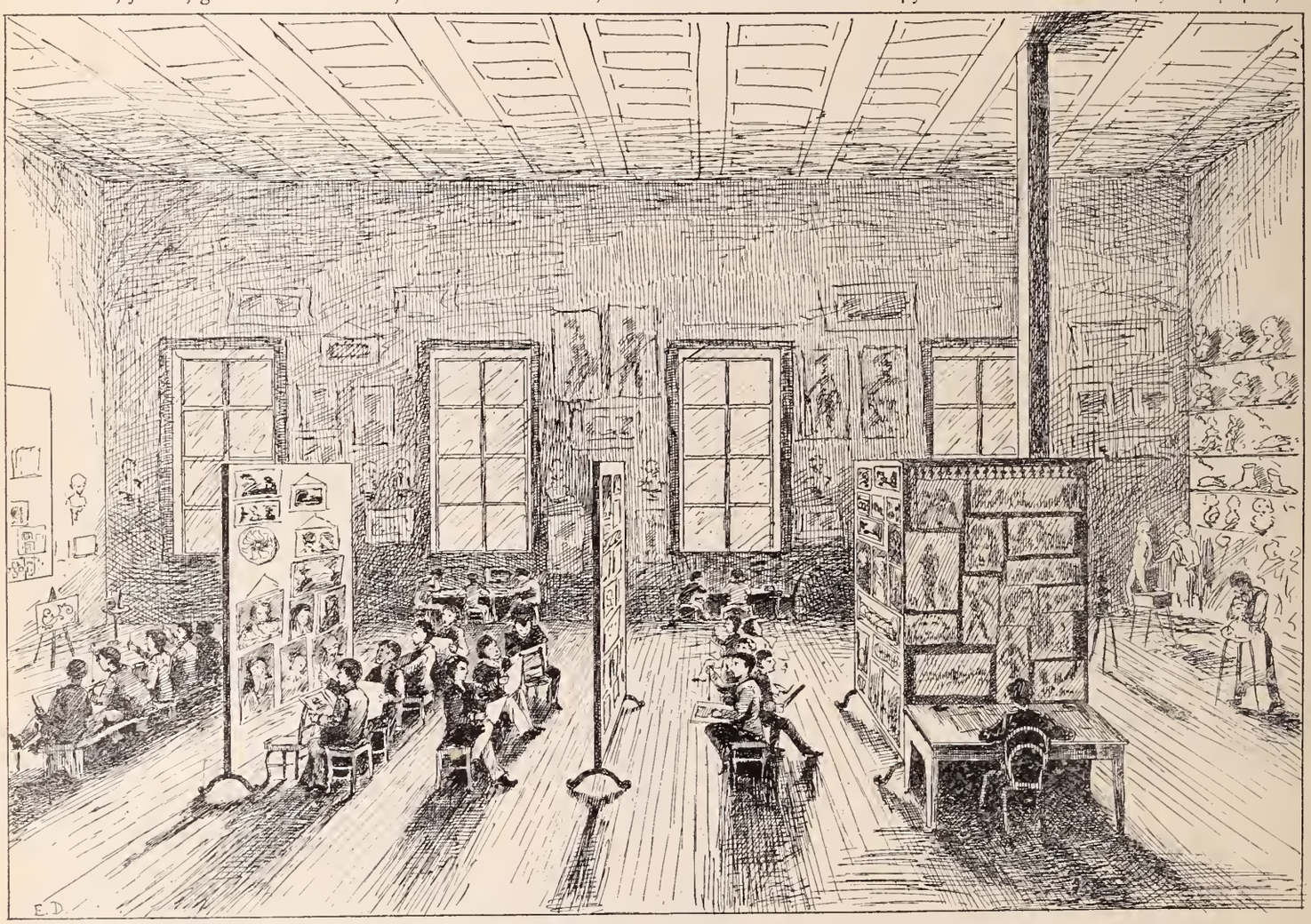
ENTRANCE TO THE CONSERVATORY OF ARTS AND TRADES

put life and spirit into these little heads. He wants them to see at a glance what they have to do, and to execute it with a few masterly strokes or touches. He is the one to strike out the spark of genius wherever it is lurking.

I think the readers of THE CIRCULAR might be pleased to know exactly how the Parisian Jewelers' and Silversmiths' Art School (an old institution already) is managed. Therefore I do not hesitate to place before their eyes its entire programme, as revised a few years ago, together with some of its regulations.

The teaching consists of:

Elementary principles of linear drawing, in free hand and with compasses.—The study *de visu* of the shades of simple geometrical solids.—The drawing of imitation (*Dessin d'Imitation*) ornaments and figures.—Modelling.—Industrial drawing, including the study of artistic works, jewels, gold and silverwares, articles of furniture, real



INTERIOR OF INSTALLMENT ART SCHOOL FOR APPRENTICES IN JEWELRY, ETC.

plants, etc.—In a special class the principal styles and orders of architecture, as well as the chief rules of composition, are taught.

The teaching is divided as follows:

Drawing—first stage—lines.

First week: Oral lessons, illustrated on the blackboard, showing straight lines and their arrangements.—Free hand copy of those lines and figures.—Copy of ornamental sketches consisting of those arrangements of lines.

Second week: Oral lessons on curved lines, illustrated on the blackboard.—Free hand copy of those figures, subsequently rectified with compasses.—Copy of sketches made with those arrangements of lines.

Third week: Oral lesson—Division of a circle into 4, 6, 8 and 5 parts.—Arrangements of curved and straight lines.—Free hand copy of them, rectified afterwards with a ruler and compasses.—Copy of sketches consisting of those figures.

Fourth week: Competition.—Oral recapitulation, illustrated on the blackboard, of all the above arrangements of lines.—Free hand copy rectified with ruler and compass, of some of them.—Copy of sketches consistent with the above part of the programme.

Second stage—solids.

First week: Oral lesson.—The master will show to the pupils rectilinear solids, and explain to them the philosophy of shadows, in altering repeatedly their positions; he will then reproduce these solids on the blackboard.—Free hand copy of them (outlines and shades) by the pupils, with subsequent rectification.—Copy of sketches consisting of those solids.

Second week: Oral lesson.—Disc, sphere, half sphere shown to the pupils, with explanations about those solids, in altering their position, so as to change the shades.—Reproductions of those solids on the blackboard.—Copy of them, with shades, by the pupils, and rectifying.—Copy of sketches introducing them.

Third week: Oral lesson.—Polyhedrons, cylinder, cone, etc.—Reproduction of them on the blackboard.—Copy by the pupils, etc.—Copy of sketches consisting of those figures.

Fourth week: Competition.—Some of the sketches should be copied from models in relief.

Henceforward modelling will be learned together with drawing.

Third stage—Ornaments.

Study of ornaments from engravings.—Oral lesson.—Complicated solids.—Copy of ornaments in relief.—Competition on the above.—Modelling of ornaments with clay.

Fourth stage—Ornaments, Figures.

Study of ornaments from models with relief.—Figures copied from engravings.—Competition.—Ornaments introducing figures, copied from models in relief.—Modelling, with clay, of ornaments and figures.

Fifth stage—Industrial Drawing.

Copy of real plants, artistic works, keramics, jewels, silverwares, pieces of furniture, etc., from models in relief.—Modelling of all kinds of articles with clay and wax.

For the third, fourth and fifth stages there will be a competition every other month.

During the winter months a special class is opened on Sunday, to which are admitted all pupils who have gone beyond the third stage. The master will explain the principal styles and orders of architecture; 2nd, describe and illustrate the arms, furniture and costumes, with articles of adornment of different periods; and 3rd, explain the chief rules of composition. A competition on one of the above subjects will take place every month.



RELIEF DRAWING.

Among the numerous regulations, a great many are meant to enforce order, punctuality and good behavior. As these are in no way different from those required in other schools, it is unnecessary to reproduce them here. The following are the only ones offering special interest.

The Industrial School of Art and Modelling, for apprentices, jewelers and silversmiths, is under the management of a commission consisting of eleven members of the Chambre Syndicale, besides the President of the Chambre. The eleven members of this commission are re-elected or replaced every year. They meet at the end of each month to examine the reports submitted by the professors, and to deliver certificates to the pupils. Two members of the Chambre, not belonging to the commission, are elected for a month as inspectors, and must, before leaving their office, send to the President a report giving their observations. Once a year the commission has to give a full account of the condition of the school.

No one is admitted to the school if he is not an apprentice, artisan or employee in one of the branches of industry represented in the Chambre Syndicale. A sum of two francs per month must be paid, either by the apprentice or by his parents or employer. Each pupil receives every month a *carte de présence*, which must be marked by the overseer every day. At the end of the month a certificate (signed by the parents or the employer) is delivered to each pupil.

At the end of the year a prize competition takes place, the prizes awarded being delivered at a public sitting, held in the *Grand Amphitheatre* of the *Conservatoire des Arts et Metiers*. A diploma of honor is awarded for a work (drawing or sculpture) considered by the jury worthy of it. Pupils who obtain it enjoy a free admission to the school as long as they choose to attend it. Works that obtain prizes are exhibited, and those found to be superior become the property of the Chambre Syndicale. The names of pupils distinguished on account of their good conduct, punctuality and meritorious work in the course of a month, are inscribed on the roll of honor, and those who repeatedly receive that mention receive a medal at the end of the year.

Nothing can be more pleasant to see than a large gathering of young fellows who, after a hard day's work, are earnestly endeavoring to grasp all the notions of art. Of course, in a school like this, pupils are not all doing the same thing at the same moment, which offers to the looker-on, as he walks about the place, a great variety of scenes. In my brief description I forgot to say that on one side of the room, in front of the wall where the blackboard is, extends a rather large space for pupils belonging to the same class to assemble and follow the professor's explanations. When a verbal lesson is going on, as was the case the other night, advanced young artists occupy that space, being scattered around an alto relievo model, ornament, vase or figure which, from various standpoints, they copy in drawing. A special corner of the room, right opposite to the blackboard side, and nearly divided from the rest by a partition, belongs to the modellers. I saw a few of them reproducing with clay a Greek ornament, another group were busy copying the large wing of a Victory, and some who had been provided with plain vases in clay were adding to them ornaments and handles, as indicated in a drawing. Our illustration shows one of these vases. The vine leaves and the mask are very delicately treated. This work requires on the part of the pupil a fine taste and a well-trained hand.

(*To be continued.*)

The Burmese Ruby Mines Concessions.

THE Burmese Ruby Mines still engage public attention. The *Rangoon Times* recently published a long account of an interview which one of its correspondents had with Sir Lepel Griffin. Referring to certain localities where rubies had been found outside the Mogok district, and in reply to a question what concession the Ruby Mines Company had for the rest of Burma, Sir Lepel said: "The Government have not conceded and will not concede land to other people, however much they may think of it. There are good rubies at Sagyan, a little way down the river, which, I think, may be worked, but we have a preferential right. The Government gave us the right of taking it up if we choose, and we certainly shall choose if the Government wish it worked at all. We shall not let anybody else work it. Even if we raise a subsidiary company to do it, it will be worked." This declaration of the position and rights of the Ruby Mines Company has caused much surprise in Burma. Hitherto it has been understood that the right to mine for rubies conceded to the company was limited to a district of about 400 square miles round Mogok. The company now apparently claim exclusive mining rights for rubies over all Upper Burma. If such a wide concession has been granted the Government ought certainly not to allow the mines outside the Mogok district to remain unworked. A large revenue may be raised if concessions are granted to mine for rubies in the districts outside the tract worked by the present company. Although all other matters connected with mines are under the control of the Financial Commissioner, Sir Charles Crosthwaite retains in his own hands all matters connected with rubies. Dissatisfaction is felt that no rules have been published stating the terms on which the Government is prepared to grant mining concessions, while concessions are being granted to some fortunate applicants.

BRIDE'S LETTER OF THANKS.

[*Harper's Magazine.*]

"Your beautiful clock was received and is now in the parlor on our mantelpiece, where we hope to see you often."

Lathes and Lathe Work.

BY THE MODEL WATCHMAKER.



WE WILL continue the discussion of the manufacture of a cutting engine commenced in my last installment under the above heading. A piece of cast iron for the upper slide is provided; this should be a plate half an inch thick, three inches long, and two-and-one-half inches wide. This plate is filed and scraped perfectly flat on each side, and the two sides brought nearly parallel, although whether the sides are perfectly so or not has not much to do with the results obtained. Two pieces ¾ of an inch wide, $\frac{5}{16}$ thick and 2½ inches long, and shaped as shown in Fig. 4, are also provided. These, likewise, are of soft cast iron. Diagram *H*** is an end view of *H*, Fig. 4, seen in the direction of the arrow *v*. The pieces *H H*² are fitted to match the edges of the bed-plate *A*, shown in Fig. 1. June number of this journal. (It is to be borne in mind that all the figures and letters used in the description of the method of building a slide rest will be continuous and in series; so the reader, when he sees a figure, will be able to find it readily even if in a back number.)

The pieces *H H*² go on each side of *A*, Fig. 1, and grasp the bed-plate firmly. In fitting up such pieces, they are first cast as near the perfect form as possible; they are then filed and scraped, and finally ground to the exact angle on a roughened glass slab with fine oil stone dust. The frame for grinding such edges is shown in Fig. 5, and consists of three bars joined as shown in diagram *J**. Of these bars, *J*³ and *J* are about 5 inches long, and *J*² 3 inches, as it extends between the pieces *J*³ and *J*.

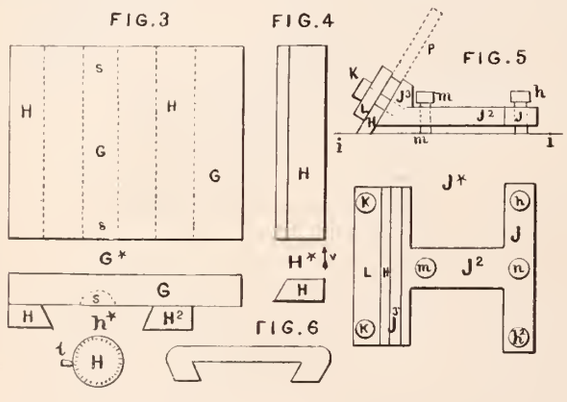


Diagram *J** is a plan of Fig. 5 looking down. The plan of the device is the angle presented by the piece *H* to the ground glass slab (the face of which is represented by the line *i i*), and is 60 degrees. It is desired to have all the angles of such slides as *A*, Fig. 1, and *H*, Fig. 4, exactly at an angle of 60 degrees. This is effected by having the face of *J*³, Fig. 5, filed and scraped to this angle. The loose bar *L* serves as a clamp by the screws *K*, to clasp any piece like *H* firmly in place and hold it while in the process of grinding. It will be noticed in Fig. 5 and diagram *J** that there are two screws shown at *m n*; the use of these screws is to insure the face of *J*³ being exactly at an angle of 60 degrees to the face of the grinding plate *i i*, which can be very nearly determined by sweeping a circle 6 inches in diameter on a sheet of metal with fine pointed dividers, and dividing the circle in six spaces and drawing the lines *o o*, Fig 6, the arc between these lines of course representing 120 degrees. If a straight edge is clamped between *L* and *J*³ as shown at the dotted lines *p*, we can compare the angle between it and the face of *i*, with a sector of either 60 or 120 degrees—that is from the radial line *o*² to *r*, or from *o* to *o*², an angular space of 120 degrees. It will be seen that by turning the screws *m n*, the adjustment can be perfectly arrived at.

After these screws (*m n*), are once set, they are to be only used as test guides. The base-bed *A*, Fig. 1, can be ground on this frame by letting the screws *K K*², diagram *J**, go through two holes drilled for the purpose, one of which holes can be used for the screw *a*, Fig. 1; the other hole can be used for the same screw when we move the bed *A* forward, as we will occasionally do when we get to describing all the work which our slide-rest will do.

To set the grinding-frame shown in Fig. 5, we first adjust it by placing the 3-inch straight edge shown at the dotted line *p*, and manipulating the screws *m n* so the sectors shown in Fig. 6 tell us the face of *J*³ is set at an angle of 60 degrees to the face of *i i*. We turn down the screws *h h*² so that they, as well as *m n*, rest on the glass slab; we next place one of the pieces *H* between *L* and *J*³, and letting its already filed and scraped bevel edge rest on the glass slab *i i*. We can, by leaving the screws *K K*² a little slack, tap *H* with a light hammer so as to bring it into exact position, so that the beveled surface of *H* will, by smearing a little red lead and oil on *i i*, indicate that the greater portion of this surface rests on the glass, or in other words that the beveled surface of *H* and the flat surface *i i* nearly coincide. We now commence to grind the surface of *H* on the roughened glass slab with oil-stone dust and oil. It would not do to let screws *m n* grind off because such a course would destroy our adjustment; we therefore arrange the screws *m n* so that we can turn them back out of the way, and can then turn them forward to their former position. This can readily be accomplished by placing broad heads on these screws as shown at *h* diagram *h**.

Another frame shaped nearly as shown in diagram *J**, should be provided; but the part at *J*³ is left flat for grinding flat surfaces like the part of *H* which comes in contact with the flat plate *G* In this frame two screws corresponding to *h h*² are provided, but the screws *m n* are omitted. The pieces *H* are best secured to this frame by some cement, which is to be heated; a composition consisting of yellow rosin, 2 parts, shellac, 1 part, yellow ochre, 1 part, answers well; 2 parts black pitch to 1 of brick dust, is also useful. In grinding the base plate *A* it is necessary in addition to having the angles correct, to have the edges exactly parallel, so the slide represented in Fig. 3 will move from end to end (of A) with equal friction. To accomplish this first file and scrape to correspond to a steel templet shaped as shown at Fig. 6. Then *A* is placed on *J*³ as has already been described and ground to obtain the proper angle. After both edges are ground *G* is placed on *A*, and side pieces *H H* are brought up snug to *A*, and *G* moved from end of *A*; and if one end of *A* is found by this practical test to bind a little harder than the other, *A* is again restored to *J*³ and by means of the screws *h h* the two surfaces—that is the surface of *A* and the surface *i i* of the glass slab are brought by testing with red lead and oil, applied as the thinnest smear, to exactly correspond. Now by retracting one of the screws *h*, a suitable reduction can be made on *A* by grinding with oil-stone dust and oil. By taking the precautions to use but a slight coating of oil and oil-stone dust, work can be ground almost absolutely perfect. All the screws like *h m* and *n* should be of steel and intensely hard. The screws just named should be for this purpose about $\frac{3}{16}$ of an inch in diameter. A concave groove is filed in *G* at *S* $\frac{3}{16}$ of an inch deep and extending across the plate as indicated at the dotted lines in Fig. 3. An index point is placed as shown at *t*, diagram *h**, to enable us to restore the screw to its former position.



More Gold.—Auriferous sand has been found near Ashburton, West Australia. Diggers have unearthed about 1,000 ounces of the pure metal in the last few weeks. The deposit is said to be 25 miles long and 20 miles broad.

Increase in Value.—A German technical publication reviews the enormous increase of the cheaper metals when fashioned by the hand of man, as well as of the prices of the rarer metals. Designating the weight unit of iron ore by 1, then the ratio of elaborated iron is, for wire, 40.42; cast steel, 82; knife blades from 5,000 to 10,000; and fine and finest watch springs from 20,000,000 to 90,000,000. If, therefore, 1 kilogram of iron ore costs one-half pfennig, then 1 kilogram [2 lbs. 3¼ oz., avoirdupois] steel in shape of watch springs is worth 450,000 marks, while 1 kilogram gold values at most 4,000 marks. Far more precious than gold are also the so-called rare metals, which are never produced in large quantities, but only in grains. Thus, 1 kilogram of barium is according to its degree of purity worth from 8,000 to 30,000 marks; berylium, from 27,000 to 43,000; galium, from 400,000 to 750,000; germanium, from 140,000 to 175,000 marks, while the corresponding figures for silver, gold and platinum range, the first from 200 to 250 marks; the second from 3,500 to 4,000; and the third from 4,000 to 5,000 marks. Iridium, used in horology and as points for gold pens, costs from 5,000 to 6,000 marks. An increase similar to that of iron, occurs also that of real lace. It values occasionally 300,000,000 times as much as the flax or the silk used for its manufacture.

Another Costly Clock.—The family of Rothschild, of Paris purchased a short time ago the historical clock made by Louis XVI. for the sum of $30,000. This clock, which is 14 feet high, was presented to the Countess Fitzwilliam, at her marriage. It stood for the last few years in Milton Hall, Northamptonshire, England.

Costly Cherry Stone.—At an auction of Nuremberg antiquities held at Cologne recently, a cherry stone was sold for 6,700 marks. This is a great deal of money for so small an object, but when it is considered that the surface of this small stone was by the artistic hand of Peter Flotner, carved into one hundred and thirteen portrait heads, the connoisseur will no longer marvel at the price.

Clever Attempt at Theft.—An adroit attempt to rob a safe was recently perpetrated on the road from Kimberley to Cape Town. A large invoice of diamonds was in the treasury car. Some "kleptomaniac," who must have been well-informed as to the premises, crept under the car, fastened one end of a rope on each side, with a seat right under the place where the diamonds were stored, and lying back drilled through the car floor, to get at the "shiners." He was unsuccessful, however. Although he managed to cut a hole two feet long and one foot broad at the place where the safe with the diamonds stood, it appears that the train arrived too early at its place of destination, so that the thief could not accomplish his design. The invoice of diamonds was worth £22,000, although it occurs frequently, that quantities to the value of £150,000 are sent from Kimberley to Cape Town.

Strikes.—Strikes and protests of the silver and goldsmith and jeweler journeymen are at present the order of the day in Germany. Those of Mr. Erlemana in Hamburg struck because he forbade them to join the journeymen jewelers' union The Journeymen Jewelers' Union of Handu is threatening a strike, and the engravers and chasers of Germany are about to issue a call for a national congress to take into consideration their condition, and, next, the matter of wages. They are also in favor of nine hours work per day, cessation of Sunday and extra work, as well as a 25 per cent. increase of wages.

Disappearance of a National Industry.—A committee of watchmakers, Dr. V. Dreyfuss, as chairman, of Besançon, France, has issued a pamphlet, entitled: "La défence d'une industrie nationale: la fabrique d'horlogerie de Besançon," [The defense of a national industry, etc.,] in which the learned author deplores the present low condition of the watch industry of France, and the little attempt on the part of the government to aid it. Among other things he says: "In less than 7 years the watch manufacturers of Besançon have retrograded by 132,000 watches (of which 68,993 of gold). This is a decrease of more than seven million francs, and is principally felt in our workshops among the working people. The Swiss watch industry is constantly increasing, having passed beyond the St. Gotthard, and spread to the shores of the Lagomaggoire," etc.

The Claims of the Wife.—According to a recent judgment of the civil court of Nimes, France, the jewels offered by the future spouse to his intended wife, or the sum of money given by him to her for the purchase of jewelry, are the property of the wife, while presents of the like nature during marriage belong to the husband. The case in court was as follows: Mr. and Mrs. B. were married in the month of April, 1885, and divorced in 1889. In July, 1888, Mr. B. presented to his wife a diamond ring of the value of 2,000 francs, and when divorced she claimed it as her property. The court decided that in view of the value and the date of the gift, and that it cannot be considered a daily occurrence, the husband purchased and gave the ring to his wife simply for the purpose of sustaining the claim and honor of the house, and it thereby became, as it were, the livery of his rank, but not her personal possession; the husband, therefore, has just claim to it. Mr. B. also claimed the betrothal ring, of the price of 1,400 francs. The court decided against him, however, on the ground that the ring was personally given to the prospective bride as a souvenir of the betrothal, thereby constituting it in the most personal and irrevocable of all the gifts made to her before marriage.

Damaskeening.—Attempts are made by the leading jewelers and goldsmiths in Europe to revive the art of damaskeening, or damascening, as it is also called. Without entering here into details concerning the Damascus sword blades, the process was also applied to inlaying gold and silver. Most excellent and beautiful work of this art was to be seen at the first Paris Exposition, in 1867. The pieces were of Spanish workmanship, and it is but reasonable to suppose, the designs and forms were of Moorish style (Spain being still to-day a faithful adherent of it), while the quality was unsurpassed, in fact of such a masterly technical execution, that only first class connoisseurs could distinguish between that of old workmanship and that of new. The Jewelers' Circular will at an early date give a full description of the process. Suffice it to say that the articles were sold at once and brought fancy prices. The favor with which the work was received, of course, instigated others to try their hand at producing it, and more or less inferior productions are at present in the market.

Method of Regulating a Clock.

VARIOUS plans have been recently proposed for rapidly timing a clock, all being based upon one idea, namely, the temporary addition of a seconds hand for the purpose of observation. That suggested by a M. Jacomin is recommended for its simplicity.

Having removed the pin and washer that keeps the minute hand in position in an ordinary timepiece, replace them by a light brass cap that can be fixed by a screw or in any convenient manner, so that a fine steel pin projecting from it shall be accurately in the axis of the minute wheel. Part of a watch movement, comprising only the center, third and fourth wheels with seconds hand attached, is supported in front of the clock dial, so that this pin can be inserted in place of the set-hands arbor, and it is evident that, if the clock is to time, the seconds hand should perform one revolution per minute, as it will form part of the clock train. The length of the pendulum must then be varied until this condition is found to be satisfied.



To Mend a Vulcanite Watch-Chain.—A watchmaker has occasionally to mend the broken parts of a vulcanite chain. If he attempts to open a link while cold, it will almost invariably snap, especially if it be a stout one; and if it does not break the ends fly open and will not close again. Heating by candle or fire will burn the links, but if held over the chimney of a kerosene lamp, the link will in a few seconds become so soft that you might bend it straight. You may in this manner manipulate it according to desire. Horn or tortoise shell may be treated in the same manner.

Gold-Colored Varnish.—For preparing a gold-colored varnish, pulverize 1 drachm of saffron and one-half drachm of dragon's blood, and put these ingredients into one pint of spirits of wine. Add two ounces of gum shellac and two drachms of soccotrine aloes. Dissolve the whole by gentle heat. Yellow-painted work varnished with this mixture will appear almost equal to gold.

Drip for Tools.—Carbolic acid is recommended for moistening the tools with which metals are worked. The efficiency of the grindstone even is said to be increased by the use of acid. The dark and impure acid can be used for this purpose.

Re-lacquering Brass Ornaments.—The following is a good method for re-lacquering brass ornaments: Wash the objects in a hot solution of potash, fairly strong. When the lacquer is removed, the articles should be washed and dried, then re-polished before lacquering; clean well and wipe with lime. Then, when free from rust or dirt, warm on a stove until just hot enough to hold in the hand, then lacquer with either brush or piece of raw cotton.

Lucene for Cleaning Watches.—Benzine is often recommended for cleaning watches. Refined benzine, deodorized, called lucene, is the only article that should be used for the purpose. Use the peg freely by dipping in lucene and riming holes. Allow every part to remain in lucene for some time, except the balance and spring—say about five minutes for them—and then dip the tip of a fine brush in lucene and proceed to clean the plates and train. Remove jewels and place them in a cup, also springs, screws, etc. Allow jewels and spring to dry on clean blotting paper. Dip the jewels two or three times and lay them on paper as before, and then dip and place jewel between thumb and finger and strike it with a clean, dry, fine brush. All lucene comes with the name stamped on the bottle; it can also be had in quantity, but be sure you get a good article. It would be best to use that which comes in bottles, first as a test. Do not use alcohol with prepared chalk, as it is apt to run into jewels and places where it will do harm. Use clear alcohol after the lucene has evaporated, and draw the brush over very fine chalk. By cleaning the mainspring in lucene and not wiping, or opening, or spreading the spring, you will have fewer springs to break, than when cleaned with alcohol, which is the cause of more springs breaking than any one thing, except spreading and wiping.

Compensating the Balance.—When the timer finds that a watch, otherwise in good order, and timed in common temperature, loses in heat and gains in cold, it is a sign that compensation is too weak. To correct this, the weight of the balance screws must be moved toward a place on the balance rim, where the inner or outer movement, occasioned by the changes of temperature, is greatest. It is evident that at the place where the rim joins with the arm, the compensation movement must be equal to O, but it is greatest toward the free rim end, and this knowledge suggests the remedy for a correction of the compensation. When this is too weak, remove the weight screws further toward the free rim ends. The quantity necessary cannot be stated in figures, or calculated, but has to be ascertained by experience. When the screws have been so far removed to the ends of the rim, as its holes will permit, and the compensation is still too weak, it is evident that the screws are too light—in other words, the rim is too heavy. If circumstances forbid the taking out of the old balance and replacing it with a new and better one, the only means left is to put in a few screws of some heavier metal—gold or platinum—and try their effects.

Timing Screws.—In answer to an inquiry, the Circular wishes to inform the correspondent, that only in the case the watch he speaks of gains or loses, should he touch the timing-screws, and from the style in which he couches his question, it is perhaps better if he were to confide the work of timing the watch to one better conversant with such jobs than he appears to be. The *rationele* of timing the balance is about as follows: A compensated balance has four screws, the timing screws, placed at equal distances round the rim of a watch compensation balance, which are used for getting the watch to mean time; these screws have large, heavy heads, and by screwing them in toward the center, the inertia of the balance is decreased, and *vice versa*, by removing a screw entirely, as he proposes to do, the weight of the balance is correspondingly diminished; if, with all screws screwed in to the fullest extent, the watch still loses, it is altered by removing some screws. In every case, when the timing-screws of a balance are removed, the greatest care must be exercised to keep the entire balance in equipoise. Above all, the length of the balance spring must not be tampered with. The position of the screws on the arms of the balance are arranged to produce an alteration in the inertia corresponding to the alteration of the spring. After due reflection, it is well if he sends the watch, securely packed, express, to one of the several reliable watch repairers whose advertisements are contained in the Circular. The charge will be very reasonable, and he has the satisfaction of delivering a well performed job to his customer in place of a piece of botch work. Timing is a very difficult piece of work, and one who does not fully understand it, had better leave the work to one more conversant with the subject.

To Resharpen Old Files.—First clean well with scratch brush, then with benzine; see that the file is thoroughly clean, then place it in a bath of the following solution: One part water, five parts sulphuric acid Let it remain for three or four days, or until the edges of the file are fully restored. Wash thoroughly with water to remove the acid, when the file will cut as well as if new.

Hard Soldering Without Blow-Pipe.—A blow-pipe is not necessary in hard soldering, except to direct the flame. For coarse work, it may be dispensed with. In shops where gas is used, it is common to use a gas jet for soldering, and by regulating the size and shape of the flame, a great many jobs may be done with the gas jet alone. For fine work, however, there is no practical substitute for the blow-pipe, because it permits of such perfect control of the size and character of the flame, and of directing the point of greatest heat to the exact spot where it is needed to cause the solder to flow, or lead it to "run" in the right place and nowhere else.

Burnishers.—Burnishers, to be kept in good condition, should have their surfaces touched up from time to time, by passing over them a buffstick charged with rouge or very fine emery and other kinds, more or less fine.

Case-Hardening Iron.—If you desire to harden to any considerable depth, put the article into a crucible with cyanide of potash; cover over and heat altogether, then plunge into water. This process will harden perfectly to the depth of one to two inches.

To Clean Brass Articles.—In a stoneware vessel make a mixture of 1 part common hydrochloric acid, and ½ part sulphuric acid; dip the articles into it, rinse and rub with sawdust. If the brass is greasy, it should first be dipped into a solution of potash or soda in warm water.

The Art of Enameling.

(*Continued from page 47, August, 1890.*)

THE ENAMEL COLORS.

THE enamel painter has at his disposal quite a large list of colors, and by suitable mixtures he is able to compose any shade desired. His paints are:

For white: Oxide of tin.

For yellow: Oxide of antimony, antimonious potash, antimoniate of potash, antimoniate of lead, oxide of silver, oxide of iron, oxide of uranium.

For red: Oxide of iron and alumina, sodium and chloride of gold, chloride of tin and chloride of gold, purple of Cassius.

For orange: A mixture of yellow and red; brown pigments.

For green: Oxide of copper, oxide of chrome or protoxide of iron.

For blue: Protoxide of cobalt, silicate of cobalt (so-called smalt) zoffre.

For violet: Oxide of manganese.

For brown: Oxide of iron.

For black: Protoxide of iron in larger quantities.

We omit describing the processes used for compounding colors with these oxides and other chemical combination, their manufacture not being the work of the enamel painter or goldsmith, but of the chemist. If, however, there are those who desire further information THE JEWELERS' CIRCULAR will most cheerfully furnish it on application.

The writer closes with a few remarks concerning the proportions to be observed between the covering frit and the different colors, and these apply specially to these colors prepared from gold preparations.

The gold preparations are distinguished by their great affinity for being reduced into metallic gold. If in consequence of an incorrect treatment a gold-containing enamel color should be reduced into the metal, the enameler will have, in place of the light red or dark purple, according to the color, a more or less dark brown spot with metallic luster, consisting of finely divided gold. It is necessary, therefore, to fuse gold preparations at as low a degree of heat as possible, and they must never be applied immediately upon a base containing lead or tin, nor must they be brought into contact with a covering mass containing lead. If, consequently, the enameler desires to make the most of his gold color, he must coat the white covering mass with a covering free from lead, and execute the painting with gold color only upon this; the latter, as above said, is to be fused on only at a very low heat.

Pigments, such as oxide of cobalt, oxide of chromium, and all iron colors, which withstand any degree of heat with impunity, are very easily treated; the composition of both base and covering frit, as well as the temperature used for fusing them, has no influence on them. Copper pigments are more sensitive, and antimony and silver are more so, being altered by an unduly strong heat. Silver colors also are easily reduced into the metal, and in this condition form a grey spot with a metallic luster.

If, therefore, easily reducible preparations are to be fused together with the glass charges which are to be colored with them, it is evident that great care is necessary. Gold purple is in small quantities mixed most intimately with highly fine pulverized borax (3 parts), chalk (1 part), and quartz flour (3 parts); the mass is filled into a glazed and covered porcelain crucible, which is placed into a larger one, equally covered; these two crucibles are used for the sake of keeping out the fire gases, and fused at as low a temperature as possible. The dark red mass is pulverized, washed and made of a corresponding lighter color by a suitable addition of frit of the last mentioned composition (3 quartz flour, 3 borax and 1 chalk).

For the antimony and silver preparations, mixtures are composed of easily fusible lead glasses, and the preparations, together with one-half their weight of the whole mass of sal ammoniac, and very gradually heated to the fusing point. The addition of the sal ammoniac is only for the purpose of not raising the degree of heat too high; when the temperature has risen to the point at which the sal ammoniac volatilizes, it remains at the point at which the latter evaporates, this salt making use of all the heat for volatilizing it.

The preceding is about the description of the process, together with the formula as employed on the continent, France and Italy. We next append that employed in England.

ENGLISH ENAMELING.

Enamels are vitreous or glassy substances, used by metal workers for producing various designs for useful or ornamental purposes. Enamels as applied to metals have a transparent colorless base, and when required for use, a color is readily given to it by the addition of metallic oxides, of which the following formulae have been selected as the most useful:

Frit No. 1.

	Parts.
Red lead	10
Flint glass	6
Saltpeter	2
Borax	2

(*To be continued.*)

The Equalizing Tool.

UNDER the heading, "The Beveling Tool for the Correction of Faulty Anchor Escape Wheels," the *Journal der Uhrmacherkunst* republishes the following article with illustrations and several alterations in its April, 1890, number. The original article was published as early as 1881, and THE CIRCULAR translated and published it immediately afterward. But so many years have elapsed since the dates of these publications, that there is an entirely new set of watchmakers at the bench, and THE CIRCULAR, therefore, may also safely republish it without fear of a charge of reiteration.

The beveling plate in the accompanying illustrations is made very easily and without great expense, any new medium-sized depthing tool may be used, it not being injured thereby; if, however, the repairer has an old depthing tool on hand, it is better to use it by altering the centers. When using a good depthing tool, four other centers must be used, two carrying the plates, and two with protective holes for the escape wheel pivots.

A piece of sheet brass *p*, fig. 1, 6½ mm. thick, after preparation,

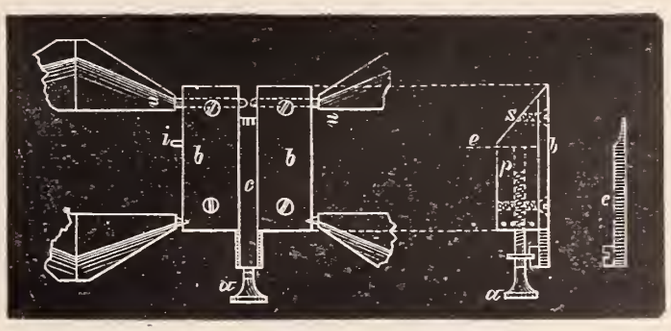


FIG. 1. FIG. 2. FIG. 3.

is made of the breadth of the space of two opposing centers of the depthing tool; in other words, about 17 mm. broad and 19 mm. long. A medium large hole is drilled through the longitudinal center of this piece *p*, and tapped for the reception of the screw *a*. Two steel plates *b b*, fig. 1, are next, each with two screws, the heads of which are countersunk in the plates, fastened upon the brass plate.

These two plates, which in the middle stand 2.25 mm. apart, are filed level underneath, in order to accommodate the slide *c*, which may be moved like a vertical wheel slide in the verge bridge by means of the screw *a*. This slide contains in front three small incisions of different breadths, and the scape wheel to be corrected is fitted into one of these. The slide must at this place be fraised out below (fig. 3) to admit of the free motion of the wheel. The bevel *s* is next filed on the brass plate, so that the remaining angle measures about 40°. A space for motion is also to be made by means of a square file in the plate for the wheel, which corresponds to the breadth of the slide and reaches as far as the dotted line *e*, fig. 1.

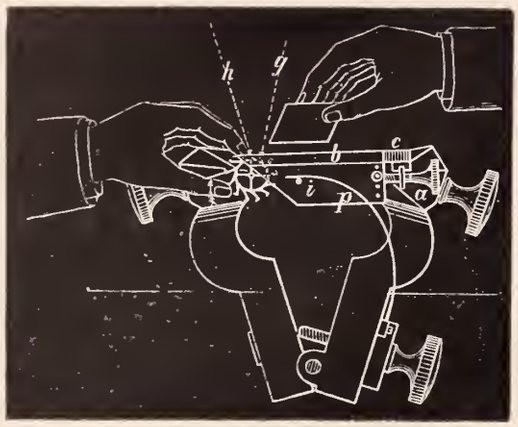


FIG. 4.

In order not to be exposed to the danger of tipping the plate over by carelessness, by which the screw head *a* strikes against the scape wheel, thereby breaking it, the pin *i* is drilled in, and a spring is bent over with function as shown in fi . 4. In order to show as plainly as possible, the scape wheel in the illustration is made a little larger than its actual size.

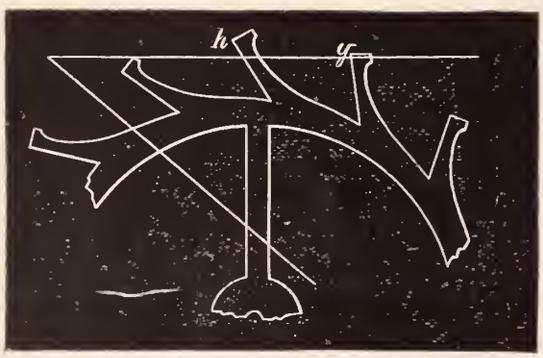


FIG. 5.

Four holes are finally to be made on each of the two sides of the plates, for the reception of the centers. These sinks must be made with great exactness, as an inequality in their distance would be productive of a bad position of the plate. The upper holes will be used for a wheel of a 14-line watch, and the lower for one of a 20-line watch. The two plates are next to be tempered glass hard.

MANIPULATION OF THE TOOL.

It will be seen from fig. 4 that by the opening and closing of the depthing tool, the plane of the beveling plate receives a greater or smaller inclination, and it becomes possible by means of the screw *a* to bring the lifting plane of the escape wheel with the whole plate in one direction, or if the lifting is an incorrect one to place it in the desired direction (shown in fig. 5 on an enlarged scale). Care is only necessary when placing in the wheel, that the plate rests really upon the centers *n n*, fig. 2, and not perhaps upon the wheel itself. The wheel must remain free so that it only needs to support the trifling pressure in grinding and polishing. The grinding of the teeth is effected with a small Mississippi stone about 14 mm. long intended for this purpose, and the polishing with a piece of composition metal equally as long. Fig. 4 shows the manner in which the operator had best use his hands, which are, for the sake of plainness, sketched very small in proportion to the depthing tool, which, together with the plate, are represented in natural size. The index finger of the left hand presses the beveling plate against the two centers *n n*, the thumb retains the wheel in one of the small incisions, and exerts the pressure in the direction of the arrow, while the third and fourth fingers hold the depthing tool securely, the arm resting upon the work bench. The right hand conducts the stone, plentifully lubricated with oil, gently to and fro over the plate, thereby removing the projecting part of the tooth *g* (figs. 4 and 5), taking care not to injure the next following tooth *h;* this can also be prevented by making the stone of rhomboid shape. Tooth after tooth is passed through in this manner, and, when finished, the wheel will be faultless. The plate is then cleaned, without altering the screws in any manner, and the wheel polished with the piece of composition metal and rouge.

Practical Hints for Working Aluminium.

DIPPING AND PICKLING.

REMOVE the dirt and grease from the plates by dipping them into benzine. To whiten the metal, leaving on the surface a beautiful white mat, the sheet should be first dipped into a strong solution of caustic potash, then it should be dipped into a mixture of concentrated acids, two parts nitric acid to one of sulphuric acid ; then into a solution of undiluted nitric acid and then into a mixture of vinegar and water, equal parts. The sheet should afterward be washed thoroughly in water, and dried as usual in hot saw dust.

TO POLISH.

Use a fine polishing composition of rouge, or tripoli, and a sheep skin or chamois skin buff ; although an ordinary rag buff will often answer. For fine work, use a mixture of equal parts, by weight, of olive oil and rum, made into an emulsion by being well shaken together in a bottle. The polishing stone is dipped into this liquid and the metal is polished, without using, however, too much pressure.

Aluminium may be easily ground by using olive oil and pumice. The surface of aluminium treated with a varnish of four parts oil of turpentine to one of stearic acid, or with a mixture of olive oil and rum shaken to an emulsion, allows an engraving tool to work upon it as upon pure copper.

FOR BURNISHING.

Use a blood-stone or steel burnisher. For hand burnishing, use either kerosene oil or a solution composed of two tablespoonfuls of ground borax dissolved in about a quart of hot water, with a few drops of ammonia added.

FOR LATHE WORK.

The burnishing operator should wear upon the fingers of his left hand a piece of cotton flannel, keeping it soaked with kerosene, and bringing it in contact with the metal so as to supply a constant lubricant. Very fine effects can be produced by first burnishing or polishing the metal and then stamping it in polished dies, showing unpolished figures in relief.

SCRATCH-BRUSHING.

Polish or burnish the surface, and then use a fine steel scratch-brush. A very fine finish is attained by rubbing the metal with ground pumice-stone and water. In spinning aluminium, plenty of oil should be used to prevent the clogging of the tool, and to make it cut smooth in the turning, also to assist in the spinning.

TO SOLDER THE METAL.

Soldering the metal in large surfaces has not been successfully accomplished up to the present time. Small surfaces of the metal can be readily soldered by the use of pure zinc and Venetian turpentine. Place the solder upon the metal, with the Venetian Turpentine, and heat gently with a blow-pipe until the solder is melted. It will then be found to have fixed itself firmly to the aluminium. The trouble with this as with other solders is that it will not flow on the metal. Therefore large surfaces are not easily soldered.

In cold-rolling aluminium upon rolls designed for cold-rolling hard crucible steel, it has been found possible to reduce the metal through the same sections as hard steel ; the aluminium acquired, on the average, five annealings, where the steel required three to withstand the same work satisfactorily.



Proceedings of the Watchmakers' and Jewelers' Union.

[NOTICE.—We shall be pleased to receive and discuss descriptions of new tools, attachments and improvements in any branch of our trade, and publish them free of charge; also inquiries for those desiring information on any point of general interest. Communications should be written as concisely as possible consistently with clearness, on only one side of the paper, and be received here by the 10th day of the month, in order to be discussed at our meeting for that month and inserted in the next issue of THE CIRCULAR. Address them to "Secretary of the W. & J. U., care of THE JEWELERS' CIRCULAR, 189 Broadway, New York." For full information for correspondents, see our Proceedings in THE CIRCULAR for October, 1889.]

Eleventh Meeting.—Reported by the Secretary.

Considering that the vacation season was at that time at its height, the August meeting of the Union showed a fair attendance of members. Nothwithstanding the hot weather, which engendered a desire on the part of all human beings to clad themselves in a minimum of clothes, to lie down in some shady nook, and sink into oblivion to be interrupted only by an occasional injection of some cold but searching manufactured beverage, the various subjects discussed at the meeting excited considerable interest. The first communication which the Secretary read was on the subject of

CHIPPED DIALS.

Fredonia, Kan., Aug. 1, 1890.

Secretary of the W. & J. U.:

I have a fine Swiss watch, of which the dial is chipped. Some years ago I had a watchmaker in my employ, who made a composition for mending such dials, when they were chipped Can you inform me what such a composition is made of? Yours truly, J. B.

MR. UHRMACHER volunteered the following information.

A cement for mending broken or chipped glass enamel dials is composed of scrapings of pure white wax mixed with equal parts of fine white. This mixture is melted over a spirit lamp and then allowed to cool. For use warm the dial plate slightly, and press the cold cement into the defective places. The cement adheres very firmly, even after scraping the surface over with a sharp penknife; and beating the dial slightly a white and lustrous surface is obtained.

Upon MR. UHRMACHER resuming his seat, MR. REPAIRER arose, and saying that the receipt offered was undoubtedly the best, added that in case the cement should be too hard, some wax should be added and if too soft, some zinc white. Cleanliness in the manipulations and moderate heating in mixing the wax and the zinc white are the principal precautions to be observed and which contribute essentially to the snow white color of the cement.

The Secretary then took up a letter which implored a process for

MENDING FANCY ARTICLES.

Beaver Falls, Pa., July 29, 1890.

Secretary of the W. & J. U.:

It occurs quite frequently in the course of my business that I have fans and other fancy articles made of pearl or ivory to mend. I have had very poor success, however with the glue or cement I have been in the habit of using. Can you recommend anything which is proper for the purpose? CERBERUS.

Upon Mr. EXAMINER, who has acquired a reputation of being a veritable store-house of information, was imposed the task of satisfying the would-be guard to Hades. He said:

The cementing of pearl, etc., is at no time an easy job, but it may be done well by complying with these directions. Roughen the faces to be joined with a somewhat coarse and sharp file or with the jagged edge of a piece of broken glass, and then use glue or cement formed by soaking half a pound of good glue in a pint of distilled water (hot), to which when the glue is dissolved one ounce of aqua fortis is added. The white color necessary is imparted to the glue by the addition of finely powdered sulphate of lead. After cementing the parts with this cement (applied sparingly) submit them to a severe pressure for about twenty-four hours, when the joints will be very strong and will not be liable to separate. This cement is known by the name, "Russian steam glue," and may be preserved for future use in a well corked bottle, to be heated in hot water before using.

DEFINITION OF "MYSTERY GOLD."

Bradford, Pa., June 13, 1890.

Secretary of the W. & J. U.:

Can you inform me, what is meant by the term "mystery gold," as I was offered some very nice looking articles of jewelry by a traveling salesman, which he said were not gold, but mystery gold. Not to show my ignorance, I did not like to ask any questions. Yours truly,

M. D.

MR. ELECTRODE said that "Mystery" gold was a new term in the jewelry trade intended to mystify, *i. e.*, to humbug. Mystery gold is undoubtedly an alloy (not gold) which will resist the acid test generally applied to 10, 12 or 14 carat gold. This alloy has led to a good deal of deception and fraud. The alloy is composed of various proportions of silver, platinum and copper, that most commonly employed consisting of 2.48 parts of silver, 32.02 parts of platinum, and 65 5 parts of copper.

As he took up the next communication, the Secretary looked knowingly at Mr. REPAIRER. He read:

Columbus, O., Aug. 4, 1890.

Secretary of the W. & J. U.:

Having noticed the variety of information imparted by Mr. REPAIRER, I take the liberty to ask him the following question: How can I restore the tone of a small gong in a Swiss repeating watch, which sounds like a piece of iron wire? Yours truly, WESTERNER.

"A pecular though pleasing sensation takes possession of one," said Mr. REPAIRER rising, "when he learns that his fame has reached to remote parts of the globe, and as Brother Westerner singles me out from this goodly assembly to answer a question, I will be pleased to satisfy him. The small gong he speaks of has probably lost its sound by rust or repeated bending or both. Bending any gong will destroy its normal molecular condition. This normal molecular condition in parting, lost elasticity may be largely restored by repeated tempering and blueing, though it will never be as good as it was originally without hardening, which is an operation requiring experience and which I would advise friend WESTERNER to undertake. But by scouring the spring clean after every blueing, and by blueing the spring four or five times he may succeed in restoring the tone sufficiently to render it satisfactory."

The Chairman remarked that Mr. WESTERNER should thank Mr. REPAIRER till his dying day, and bless him with his latest breath, upon which the latter queried if a latest breath is of much more value than an earliest breath. A few smiled, and the Secretary read a communication from a member who desired information concerning

CUT JEWEL PINS

Freeport, Ill., July 26, 1890.

Secretary of the W. & J. U.:

I have for repairs an American lever watch, of which the jewel pin is badly cut on both sides. As the jewel pin seems to be a regular one made of garnet and I have never noticed the like before, it excites my curiosity and I take the liberty to ask for information. C. B. F.

The Chairman calling upon MR. DETENT to expound his views, the latter said: The causes of the jewel pin being cut may be several. First, the steel fork may be rough in the slot and may have had some polishing stuff (diamantine) in it, and next the jewel pin may have been too thin for the slot, in which the strong impact taking place with every impulse would gradually disintegrate the cohesion of the molecules of the garnet and chip or cut away small particles. If the slot of the fork is polished and cleaned carefully I venture to

predict that a well fitted jewel pin will not be cut again. Another cause for the jewel being cut would be the forcible entry and exit into and from the slot of the fork on account of its being slightly too long or of a faulty form, though such a cause ought to have made itself manifest by causing the watch to stop or by poor time-keeping. The same thing might occur, however, if the lower balance staff pivot hole jewel is large.



At this moment Mr. Stylus asked permission to present his monthly advertising design. This design, which is illustrated here, was passed from member to member, and was generally pronounced to be the best thing he had as yet offered. Though the point of the joke was apparent to all, the chairman sought the designer to supply the text to go with it. Mr. Stylus suggested "Another astronomical discovery," and said that design would be particularly adapted to the advertising of plated or even diamond jewelry. If the dealer engaged space in his local paper, the cut showing the astron-omer could be placed at one end of the advertisement, while the other cut could be placed at the other end. Under the first cut might be said, "Prof. Delerious discovers a new star;" under the other, "The star." The Secretary then read several communications from dealers, saying that they were employing the designs of Mr. Stylus with admirable results.



The next correspondent sought information on the

TARNISHING OF SILVER.

PLEASANT HILL, MO., Aug. 4th, 1890.

Secretary of the W. & J. U.:

I have an upright show case in my store where I keep plated ware. I have noticed for some time that those articles, which I keep in the upper part of the case will tarnish more quickly and much more than those which I keep in the lower part of the case. Can you give me the reason for this difference? C. D. M.

Mr. ERUDITE asked permission to satisfy the correspondent; he said:

"The experience of our correspondent is the experience of many jewelers. The tarnishing of silver or plated ware is induced by being exposed to air containing sulphuretted hydrogen or sulphurous and other acids. One source of sulphuretted hydrogen is the burning of illuminating gas, which also yields sulphurous acid. Sulphuretted hydrogen is in dwellings generated spontaneously from different causes, and being lighter than atmospheric air, it will ascend to the upper part of rooms; this accounts for its acting more injuriously on silver or plated ware placed high or near the ceiling of a room. Carbonic acid gas on the other hand is heavier than atmospheric air, and will sink to the lower part of the room. It stands to reason, that, in order to prevent the tarnishing of silver or plated ware as much as possible, it ought to be placed on the lower part of the show-case and as near as possible to the floor. A wrapping paper may be prepared, which will entirely prevent the tarnishing of such articles having a silver surface, which are not exposed to view. Such a paper is prepared by boiling 6 parts of caustic soda and 4 parts of zinc oxide, dissolved in distilled water for two hours, Paper impregnated with this solution and dried will resist the action of the impure air, and prevent the tarnishing of silver or plated ware enclosed in it.

The meeting closed with the reading and discussion of a communication from a member in Kansas.

Fort Scott, Kan., Aug. 2, 1890.

Secretary of the W. & J. U.:

I have to pivot a balance staff, of which the upper pivot is broken. The projecting end is very short and the staff so hard that I can get no drill to bite. I wish to draw the temper home, can I do it without removing the balance or without heating and injuring the same? R. H

Our genial member, MR. O'PINION, in compliance with the desire of the Chairman said that the temper of the upper end of the staff may be drawn by taking a piece of brass wire about $\frac{1}{16}$ inch thick and 1½ inches long and bending it into a semi circle or nearly so, bringing the ends close enough to receive the two extreme ends of the balance staff into slots filed into the ends of the wire spring tight. As the balance staff under discussion is held by the ends of the wire the end nearest the upper end of the balance staff may be heated until a sufficient amount of heat has been obtained to draw the temper the degree desired; should the balance suffer accidently, by boiling in a strong solution of cyanide of potash, the coloring that the steel may have assumed may be dissipated and both steel and brass may be restored to a bright and clean appearance.

Mr. ISOCHRONAL said that another mode of heating projecting points like the one under consideration is by making a small funnel—like piece of a thin metal with a small hole in the small end of the cone, of a size to admit the end to be operated upon. By blowing the blaze of a lamp into the large end of the funnel the heat will be concentrated on the point desired without being communicated to the parts to be protected against the effect of the heat.

This talk about heat caused every one present to suddenly remember that it was exceedingly hot, and the motion to adjourn was unanimously ayed.

RECENT PATENTS.

The following list of patents is compiled from the records of the United States Patent Office, and specially reported to THE JEWELERS' CIRCULAR.

Issue of July 5, 1890.

DESIGN 20,077 AND 20,078.—HANDLE FOR SPOONS, &C.—AUSTIN F. JACKSON, Taunton, Mass., assignor to The Reed & Barton Corporation, same place. Applications filed July 7, 1890. Serial Nos. 358,006 and 358,007. Term of patents 14 years.

TRADE MARK 18,267. — WATCH-CASES. — METROPOLITAN WATCH COMPANY, New York, N. Y. Application filed April 24, 1890. Used since April 1, 1888. "The word 'STANDARD' on the figure of a horseshoe."

433,532. — WATCH-BOW FASTENER. — FRITZ MINK, PHILADELPHIA, PA., assignor to the Keystone Watch Case Company, of Pennsylvania. Filed April 2, 1890. Serial No. 346,267. (No model.)

433,578.—METHOD OF FORMING FINGER-RINGS.— WILLIAM H. PECKHAM, Brooklyn, N. Y. Filed Nov. 18, 1889. Serial No. 330,772. (No model.)

433,693.—WATCH-CASE.—DANIEL O'HARA, WALTHAM, MASS., ASSIGNOR TO the American Waltham Watch Co., same place. Filed Dec. 13, 1889. Serial No. 333.661.

REISSUE 11,100.—STEM-WINDING AND SETTING WATCH.—THOMAS F. SHERIDAN, Springfield, Ill. Filed June 18, 1890. Serial No. 355,905, Original No. 376,015, dated Jan. 3, 1888.

Issue of July 29, 1890.

DESIGN PATENT 20,058.—FINGER-RING.—WILLIAM A. BRYANT, GLEN RIDGE, N. J. Application filed July 1, 1890. Serial No. 357,421. Term of patent 7 years.

DESIGN PATENT 20,066 TO 20,068 INCLUSIVE.—CANE OR UMBRELLA HANDLE.—Albert Rosenstein, Lancaster, Pa. Applications filed June 25, 1890. Serial Nos. 356,717, 356,721, and 356,719. Term of patents 3½ years.

TRADE MARK 18,232.—STERLING SILVER-WARE.—REED & BARTON CORPORATION, Taunton, Mass. Application filed May 7, 1890 Used since January 12, 1890. "The letter 'R,' with the representation of a lion and an eagle, respectively, upon opposite sides of the same."

433,033.—JEWELRY.—HERMAN T. REGNELL, ATTLEBOROUGH, MASS., ASSIGNOR to Regnell, Bigney & Co., same place. Filed Jan. 20, 1890. Serial No. 337,543. (No model.) An adjustable ring or similar article composed of two strands of wire having a loop at one end and the other end extending through said loop and furnished with a stop, the said strands being spread apart to form an open head.

433,050.—ROLL FOR ORNAMENTING RING-STOCK.—CHARLES R. SMITH, PROVIDENCE, R. I. Filed May 26, 1890. Serial No. 353,199. (No model.) An engraved or figured roll, having its periphery provided with a series of patterns so arranged that the roll in making a revolution is adapted to impress into suitable metal or material a corresponding number of patterns having varying lengths.

433,087.—BUTTON.—LIDA J. MAXEY, JACKSONVILLE, FLA. FILED AUG. 20, 1889 Serial No. 321,381 (No model.)

433,218.—WATCH-MAKER'S TOOL.—JOSEPH SALICK, WATERTOWN, WIS. Filed May 17, 1890. Serial No. 352,234 (No model.) In a watch-maker's tool, the combination, with a lathe-chuck for containing a blank, of a marker also chucked in the lathe, and a series of tools adapted for successive adjustments in one of the chucks of the lathe for finishing the blank on the center established by the marker.

433,255.—MANUFACTURE OF BALANCE-WHEELS FOR WATCHES.—PAUL PERRET, Chaux-de-Fonds, Switzerland. Filed Nov. 12, 1888. Serial No. 290,545. (No model.) The process or method of manufacturing balance-wheels for watches or chronometers, consisting in forming a bimetallic tube, cutting up said tube into bimetallic rings, forming the ring of the balance wheel, forming the arms for the wheel, and fixing the ring to the ends of the arms and cutting through the ring to separate it into two or three segments, according to the number of arms of the balance-wheel.

433,289. STEM WINDING AND SETTING WATCH.—BERNARD HEIDBRINK, Austin, Tex. Filed Aug. 14, 1889. Serial No. 320,684. (No model.)

433,354.—POCKET TIME-STAMP.—OSCAR P. LOCHMANN, GOHLIS, NEAR LEIPSIC, Germany. Filed May 24, 1888. Serial No. 274,938. (No model.) Patented in France May 9, 1888, No. 190,511; in Belgium May 9, 1888, No. 81,758; in England May 9, 1888, No. 6,958; in Sweden May 9, 1888, No. 1,551; in Italy June 30, 1888, XXII, 23,469, and XLVI, 250, and in Austria-Hungary Aug. 6, 1888, No. 20.072 and No. 34,168.

433,372.—EYEGLASS.—GEORGE W. SCHOELLER, ROCHESTER, N. Y., ASSIGNOR to the Bausch & Lomb Optical Company, same place. Filed Oct. 22, 1887. Serial No. 253,095. (No model.) In an eye-glass, the combination, with a pad having a T-shaped slit cut in its solid body, of an attaching-piece consisting of a thin strip fitting in the closed cross portion of the slit, and a lug or lugs forming an attaching device projecting out through the open portion of the slit.

433,220.—MUSICAL CLOCK.—JOHN SPRANGERS, KAUKAUNA, WIS. FILED Jan. 2, 1890. Serial No. 335,585. (No model.) In a clock, the combination of a music-box having one end of its stop-lever at an obtuse angle, and the cylinder gear-wheel provided with an opening at a corresponding angle to engage the end of the stop-lever, a spring-arm on the stop-lever arranged to be normally in the path of the music-box fan, a lever fulcrumed to the clock-dial, a finger on the lever in the path of the minute-hand of the clock, and a cord connecting the spring-arm and latter lever.

433,225.—REPEATING-WATCH.—CHARLES BARBEZAT-BAILLOT, LOCLE, SWITZERLAND. Filed May 9, 1889. Serial No. 410,114. (No model.) Patented in Switzerland, Jan. 8, 1889, No. 334.

Issue of August 12, 1890.

DESIGN, 20 096 —CANE OR UMBRELLA HANDLE —ALBERT ROSENSTEIN. LANCASTER, Pa. Application filed June 25, 1890. Serial No 356 720. Term of patent 3½ years.

TRADE MARK, 18,293 —JEWELRY AND WATCHES.—RUBE ROBT. FOGEL, NEW YORK, N. Y. Application filed May 20, 1890. Used since November, 1888. "The word 'Victoria' and the representation of a globe, inside of which is a horseshoe."

433,935.—MECHANICAL MUSICAL INSTRUMENT.—FRIEDRICH E. P. EHRLICH, Gohlis, Germany. Filed Jan. 6, 1890. Serial No. 335,948. (No model.) Patented in Switzerland Dec. 20, 1888, No. 402.

430,050.—KEY FOR STEM WINDING WATCHES.—GEORGE H. REMINGTON, Providence, R. I. Filed Oct. 23, 1888. Serial No. 288,924. (No model.) This winder consists of a corrugated head portion arranged to engage a watch crown, and a crank-shaped handle portion attached to it.

434,137.—GEOGRAPHICAL TIME INDICATOR.—EMIL PLECHAWSKI, VIENNA, Austria-Hungary. Filed March 14, 1890. Serial No. 343,919. (No model.)

434,138.—FASTENING DEVICE FOR STUDS, ETC.—FRANK I. SHERMAN, PROVIDENCE, R. I. Filed April 19, 1890. Serial No. 348,725. (No model.) This fastening device for studs, buttons and similar articles consists of a knob, a shank extending from the back surface thereof, a tube extending at a right angle from the end of said shank, and a bar formed of wire and having a loop at one end, a terminal ball at the other, and an intermediate bow spring, this bar being movable longitudinally in the tube, and adapted by its spring to engage frictionally in the tube.

437,177.—SEPARABLE BUTTON.—ASA CUSHMAN, PROVIDENCE, R. I., ASSIGNOR to Oren C Devereux, same place. Filed June 14, 1890. Serial No. 355,507. (No model.)

434,184.—FURNACE FOR MELTING GLASS.—LUKE HOUZE, FOSTORIA, OHIO, assignor of two-thirds to Charles Foster and Leopold Mambourg, same place. Filed May 19, 1890. Serial No. 352,418. (No model.)

434,202.—SEPARABLE BUTTON.—FRANK B. RHODES AND JAMES CAMPBELL, Providence, R. I., assignors to Oren C. Devereux, same place. Filed June 14, 1890 Serial No. 355,494. (No model.)

434,220.—BRACELET.—EDWIN WHITNEY, ATTLEBORO FALLS, MASS., ASSIGNOR to Read & Lincoln, Providence, R. I. Filed April 27, 1889. Serial No. 308,835. (No model.) A bracelet composed of a continuous strip of material bent upon itself so that its ends pass each other, keepers to which the ends are respectively attached, and which are furnished with guide slots to allow the passage of the strip therethrough, and an ornamental member mounted on the strip between the keepers, and slotted to allow the passage of the strip through the member.

434,302.—JEWELRY.—RUDOLPH SENNER. PFORZHEIM, DUCHY OF BADEN, Germany, assignor of one-half to H. Drews, same place. Filed May 12, 1890. Serial No. 351,480. (No model.) In a metallic article of ornament for personal wear, the combination of two or more tubular parts engaging into each other, and chains and springs placed inside of the tubes and connecting them together pairwise.

434,377.—COIN-CONTROLLED OPERA GLASS.—EDWARD J. COLBY, CHICAGO, Ill., assignor to the Colby Improvement Company, same place. Filed Dec. 10, 1889. Serial No. 333,190. (No model.)

434,405.—JEWELRY.—EMIL W SCHILL, NEWARK, N. J., ASSIGNOR OF ONE-half to Andreas Becker, same place. Filed Nov. 14, 1889. Serial No. 330,320. (No model.) A finger ring, eombining with its body a ring-like setting having a bottom plate soldered to the inner edge thereof, a series of hollow wire cramps soldered to the upper edge of the setting, and a central hollow wire fastened to the plate, stones interposed between the cramps, and stones seated on the hollow wires.

Issue of August 19, 1890.

TRADE MARK, 18,320.—COMPOSITION WATCH CASES.—THE DUEBER WATCH Case Manufacturing Company, Canton and Cincinnati, Ohio; Newport, Ky.; Chicago, Ill.; New York, N. Y.; Boston, Mass., and San Francisco, Cal. Application filed June 16, 1890. Used since March 3, 1890. "The words 'Railway Dueber Silverine'."

434,498.—DETACHABLE LINK.—NICOLAS BOSMAN, CHICAGO, ILL. FILED Nov. 22. 1889 Serial No. 331,186. (No model.)

434,539.—METHOD OF ORNAMENTING WATCH CASE CENTERS. FREDERIC ECAUBERT, Brooklyn, N. Y. Filed July 27, 1889. Serial No. 318,903. (No model.)

434,540.—METHOD OF ORNAMENTING CIRCULAR DIES OR ARTICLES.—FREDERIC ECAUBERT, Brooklyn, N. Y. Filed July 27, 1889. Serial No. 318,904. (No model.)

434,681.—DEVICE FOR SUPPORTING SHELLS IN THE MANUFACTURE OF SEAMLESS PLATED WIRE.—Henry T. Smith, Providence, R. I., assignor, by direct and mesne assignments, to the Standard Seamless Wire Company, same place. Filed May 17, 1890. Serial No. 352,249. (No model.) A device for presenting a shell to the action of hammering means, consisting of a yielding lateral holder adapted to engage the edge of the shell, and a yielding longitudinal holder adapted to engage the end of the shell.

434,683.—CUFF OR COLLAR BUTTON.—STEPHEN TONNAIRE, PARIS, FRANCE. Filed March 31, 1890. Serial No. 345,985. (No model.) Patented in France Oct. 25, 1889, No. 188,406; in Belgium Dec. 30, 1889, No 66,646; and in England Mar 18.1890, No. 4,253. The combination with the shank of a cuff or collar button, said shank having a central recess, of shoe sections hinged to the lower end of the shank, each shoe-section being provided at its inner end with a wing of smaller width projecting at right angles therefrom, and of spring plates secured to the shank and engaging the shoe-sections sidewise of their wings, each of the spring plates having a recess through which the wing of the shoe-section can pass into the central recess of the shank.

434,781.—PEN HOLDER.—HEZEKIAH HEWITT, BIRMINGHAM, ENGLAND. Filed May 8, 1890. Serial No. 350,972. (No model.) In a metallic barrel or tip of a pen holder, the combination of a triangular middle portion having cylindrical ends with guide or indicating holes (or depression) for the thumb and finger to bear upon.

434,802.—SEPARABLE BUTTON.—CHARLES E. PERRY, FORSYTH, MONT. FILED Feb. 12, 1890. Serial No. 340,177. (No model.) The combination with a button shank composed of a base flange at one end, a cylindrical body projected centrally therefrom, which body tapers toward its free end and terminates in a coniform radially enlarged head, of a button head having a thin centrally perforated face plate and a collet held parallel thereto, with a space between, by a peripheral rim, a wedging disk secured in the central perforation of the button head face plate, and concentering locking springs that are located within the sleeve, and have their lower ends secured to the free lower edge of the sleeve, their upper ends being provided with locking shoulders which engage the coniform head on the shank body, and integral wings on the upper ends of the locking springs, which may be spread when the wedging disk is depressed.

434,832.—EYE GLASSES.—HERBERT D. MARTIN, PHILADELPHIA, PA. FILED Oct. 31, 1889. Serial No. 328,800. (No model.) In these eye-glasses there is a bridge piece and nose clamp constructed of a single piece of wire, which is formed in coils, and wave lines between the bridge piece and the clamps.



CHAIN GUARD FOR WATCH BOWS.

THIS invention, illustrated herewith, relates to an attachment for the bow of a pendant winding and setting watch whereby the hoop or terminal of the watch chain engaged with the bow shall be prevented from being wedged between the latter and the crown or knob of the winding and setting bar or key, and the crown from being pulled out when the watch is lifted by the crown from the

FIG. 1. FIG. 2. FIG. 3.

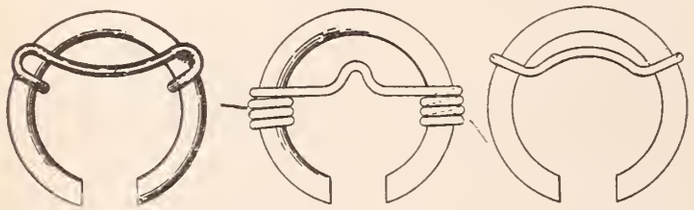




FIG. 4. FIG. 5.

pocket. When the terminal of the chain becomes crowded between the crown and one side of the bow, an outward pull on the chain in withdrawing the watch from the pocket is liable to move the crown and the bar or key outward, and thus makes the latter operative for setting the hands instead of winding the main spring, so that upon rotation of the crown the hands will be moved and caused to indicate time incorrectly. To remedy this difficulty, expensive dies have heretofore been made to stamp up a projection or lug on the bow, and bows thus made have been unsatisfactory and costly. In some cases a piece has been soldered to the bow, this piece being of such form as to constitute, with a portion of the bow, a loop or eye, which receives the chain terminal and confines it to the central portion of the bow, so that it cannot move to either side of the crown and becomes wedged between the latter and the bar. It has been also proposed to secure a piece to the bow by a screw at one end and by solder at the other. It has been found, however, that the heating of the bow involved in soldering the attachment to it, anneals and softens the bow, so that it has not the strength and elasticity which are required to hold its ends in engagement with the sockets in the pendant into which they are sprung, the bow being usually engaged with the pendant by first springing its ends apart and then allowing them to spring into the sockets in the sides of the pendant without further fastening. Moreover, the operation of securing the piece or attachment to the bow, either by solder or by screws, or both, is attended with some difficulty and expense, which in the present invention is desired to avoid, and when the screws are employed there is liability of the piece or guard being accidentally detached by the working loose of the screws.

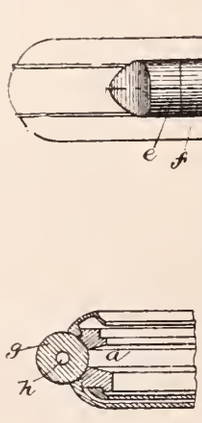


FIG. 3.

The invention under discussion consists of a detachably secured bar or spanner, light and easily adjusted to any watch bow. In special forms, they will be ornamented. The spanner will probably be sold as watch material, and is capable of being easily slipped on a bow without the use of tools. Its nature is light, clasping the bow in a bent form and being held in position by its own resilience. The general form of the device is seen in the illustration. Figs. 1, 2, 3 are side views of different forms of the device which admits of several more modifications; Figs. 4 and 5 perspective views of the guard detached from the bow. The construction of the guard and mode of putting it on the bow will be readily understood by the reader.

The inventor of this useful device is Daniel O'Hara, ex-foreman in the Waltham watch factory, who has assigned the patent to the American Watch Co.

WATCH CASE.

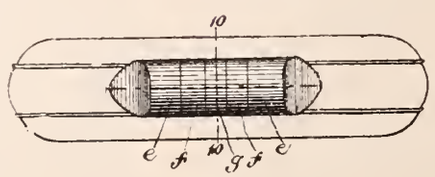
WITH the exception of watch cases in which the back and bezel are secured upon the case center, the universal method of connecting those portions of a watch case has been by independent hinges. The object of the invention about to be described (patented Aug. 5, 1890, by Daniel O'Hara, assignor to the American Watch Co.), is to simplify this hinge connection. The improvement though adapted to both hunting and open cases, is particularly intended for the latter, and in the description allusion will be made to the bezel of the open face instead of the cover of the hunting case.

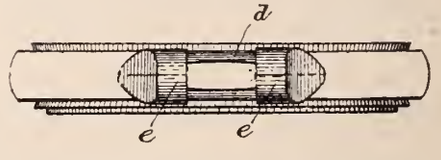
The invention essentially consists of a watch case center, having a single hinge seat formed in its marginal portion between the inwardly-projecting flanges on which the back and bezel have their bearings, and ears or bosses soldered to the seat to serve as hinge members, combined with a back and bezel provided with ears or hinge members, formed and arranged to fit the seat, and connected to the fixed hinge members on the case center by a suitable pivot pin, the hinge members and pin constituting a hinge serving for both the back and bezel.

Fig. 1 represents an edge view of the completed case; fig. 2, an edge view of the case center with the fixed ears or hinge members applied to it; fig. 3, a section on line 10, 10, fig. 1; figs. 4 and 5, perspective view of portions of the back and bezel, showing the ears or hinge members. A seat is formed in the marginal portion of the case while the back and bezel are in place on the case center; this seat is concave in cross section and straight in longitudinal section; it is made of such width that it extends partly into the edges of the back and bezel. The main portion of the seat is in the case center, and its longitudinal center is midway between the opposite sides of the case center.

e e represents cylindrical ears, which are soldered in the main portion *d* of the hinge seat at such distance apart as to leave a space between them for ears *f f* and *g*, which are soldered to the seat por

FIG. 1. FIG. 2.





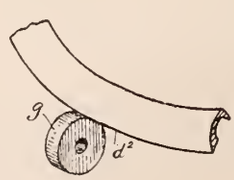


FIG. 4.

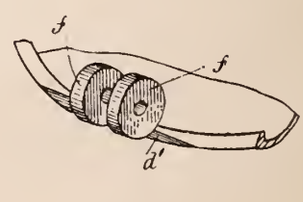


FIG. 5

tions of the back and bezel, the ears *f f* being soldered to the seat *d'* on the back, while the ear *g* is soldered to the seat d^2 on the bezel. Said ears are connected to the ears *e e*, and to each other by a pin or pivot *h* inserted in all the ears.

It will be seen that the ears *e e* and the pin *h* are hinge members, which are common to both the back and bezel, each of said parts—viz., the back and bezel—swinging on the same center. By thus connecting the back and bezel to the case center by one hinge, labor



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The claims of the Anti-Magnetic Shield as the most reliable and practicable protection against magnetism having been proven in actual use, it is for the interest of every jeweler to carry a stock. The demand for them is doubling each year.

From *Freuna's Music and Drama*, Aug. 9, 1890.

M. J. PAILLARD & CO.

THEIR REMARKABLE PROGRESS IN THE MANUFACTURE OF MUSICAL BOXES.

THEIR NEW AND IMPORTANT IMPROVEMENTS.

The Patent Automatic Stopping Device.

The history of the growth of the musical-box industry is identified with the celebrated house of M. J. Paillard & Co.

The remarkable progress that this firm has made in the manufacture of musical-boxes, and the many new and valuable improvements that they have introduced in the construction of their musical-boxes have been the means of making these instruments popular throughout the world.

Messrs. M. J. Paillard & Co have spent large sums of money in improving their musical-boxes, and have displayed great inventive skill and talent in their construction.

The firm have recently added another important patent to their list, and one which is of the greatest value.

Messrs. M. J. Paillard & Co., have purchased from Mr. F. Van Fleet the American patent, No. 417,797, and the Swiss patent, No. 1,679.

This new invention is one of the most practical and valuable patents ever introduced in the musical-box industry.

The purpose of the invention is to prevent the box from stopping in the middle of a tune, as this necessarily injures the instrument.

For many years the catalogues of the leading houses in this line have contained the following notice.

"When not used the box must always be stopped at the end of a tune, as otherwise the delicate dampers under the teeth of the comb will be damaged, and the music in consequence be marred by a squeaking and scratching noise. Strict attention is called to this rule."

The ordinary musical-box is liable to run down at any time before the completion of a tune, but this can now be prevented.

Messrs. M. J. Paillard & Co. have called the new patent the Automatic Stopping Device.

The chief object of Mr. Van Fleet's invention is to provide means for preventing a musical-box from stopping before the end of a tune, or beginning again before it is sufficiently wound up to play a tune entirely through. This object is attained by means of the construction and combination of the devices in the new invention.

The improved musical-box is provided with such automatic stop devices that it is absolutely prevented from stopping in the middle of a tune, or at any point before the end. This avoids injury to the damper and also prevents the instrument from getting out of tune, besides obviating the bad effect upon the ear of the sudden cessation of a musical phrase.

Mr. Van Fleet states in his application that after the musical-box has run down in playing one tune, it cannot be started again until fully wound up for another. Thus there is no danger that it will begin a tune without being prepared to carry that tune through.

The trade will fully recognize the great value of this new patent in musical-boxes, and also its importance as tending to increase the popularity of these instruments.

Messrs. M. J. Paillard & Co., who are the oldest established house in this country, have attained a most prominent position in the trade, and their enterprise in placing such splendid boxes on the market, with so many valuable improvements, has been the means of increasing their trade to a very large extent.



We can assist you in making Money. Write us a for Samples and be convinced.

THE PICTORIAL LEAGUE,

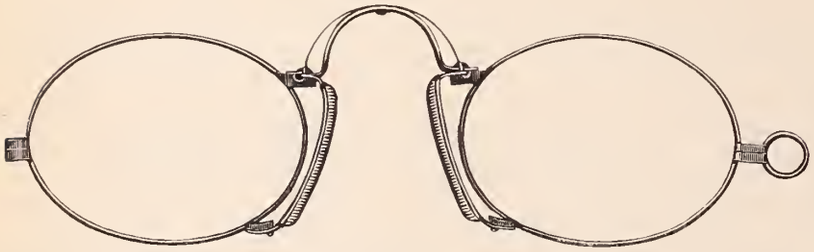
76 Tribune Building, New York.

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required in hinging said parts together is decreased, and a stronger hinge connection is obtained because the members of the hinge are larger and heavier than the members of the independent hinges heretofore used. By extending the hinge seat so that parts of it are formed on the back and bezel, it is enabled to securely solder the ears *f f* and *g* to the back and bezel without re-enforcing these parts. The seat may be made of smaller diameter, however, so that it will not extend outside of the case center.

THE EASTMAN PATENT EYE-GLASS.

THE illustration below represents a patent eye-glass which is the invention of S. Eastman, an employe in the New York office of the Julius King Optical Co. Its salient new feature consists of its being adjustable to pupillary distance. A double spring passes over the nose spring and is attached to movable nose guards, thus making them adjustable to any size of nose. The advantages of such an arrangement are obvious. This eye-glass, which is covered



by four patents, all of which have been assigned to the Julius King Optical Co., is being produced in large quantities, assorted with different pupillary measurements, which enable them to be used for a child or grown person. Though but just placed upon the market, a heavy demand has already been created for it.



[THE CIRCULAR is not responsible for the opinions or statements of contributors, but is willing to accord space to all who desire to write on subjects of interest to the jewelry trade. All communications must be accompanied by a responsible name as a guarantee of good faith. No attention will be paid to anonymous letters. Correspondence solicited.]

Centre, Ala., August 5, 1890.

To the Editor of the Jewelers' Circular:

I certainly enjoyed reading your piece on the *World*. Hit him again and keep hitting him; let all jewelers and jobbers boycott the *World*, and learn them a lesson they will never forget. I also take great pleasure in reading your correspondence, and think that THE CIRCULAR should be in the hands of every jeweler in the land, and I, for one, aim to take it soon. Truly yours,

J. J. B. MCELRATH.

We have received from the Dueber Watch Case Manufacturing Company, of Canton, Ohio, a communication enclosing a letter written by the editor of the New York *Weekly World*, to the attorney of the Dueber Company, in New York. By request we publish it:

The *World* Publication Office, *World* Building, Park Row, New York.

NEW YORK, August 12th, 1890.

Dear Sir:

The *World* endeavored in articles and editorial comments on the Watch Trust War, in the weekly editions of July 16th and August 6th, 1890, to make it absolutely clear to every reader that no connection or combination of any kind—except so far as the tariff makes all watch companies bed-fellows—exists now, or ever has existed to its knowledge, between the Dueber Watch Case Manufacturing Company, or Hampden Watch Company, of Canton, Ohio, and the manufacturers or jobbers, composing what is known as the "National Association of Jobbers in American Watches," or "Co-operating Manufacturers," or any of them.

The *World* endeavored to make it very plain, so that even a wayfaring man need not be deceived therein, that the Dueber Watch Case Manufacturing Company was not surreptitiously or openly, or in any other manner, supplying its watch cases or Hampden movements to this paper.

Not a single case or movement of the Dueber or Hampden make has been purchased or obtained by the *World* from either the Dueber or the Hampden Company, nor have these companies had any opportunity to know where or when purchases were made—nor has there been any connivance or collusion possible, so far as I know.

Trusting that this very explict statement will be satisfactory in the matter, I remain yours very sincerely,

T. E. WILLSON, Manager Weekly Dept.

JULIUS J. FRANK, 45 & 47 Wall Street, City,
Attorney for the Dueber Watch Case Mfg. Co.

WHO HAS EXCELSIOR'S BOOK?

Brooklyn, N. Y., August 11, 1890.

To the Editor of the Jewelers' Circular:

Would like to buy second-hand copy of Excelsior's "Treatise on the Balance Spring." Am willing to pay a good price for it.

R. R. SHEPARD, 151 Schermerhorn St.

NORRISTOWN, PA., August 18, 1890.

To the Editor of the Jewelers Circular:

While absent from my office to-day I met a gentleman aged about 50 years, who uses for reading what I judged to be R. — 3 00 D. sph. and L. + 2.00 D. sph. He complained of much fatigue and bad feeling in his eyes after reading a few minutes with his glasses, though he sees much better with them than without.

Making astigmatic lines on a paper with my pencil, he could see the horizontal lines at 3 feet distance with R. E., but none others.

He cannot recognize a friend across the street (using his R. E. only), though he claims to have seen distinctly at a distance when shooting birds during his boyhood. The diminished acuteness of vision in R. E. was first noticed at the age of 21 years, since which time it has become worse.

I expect him to call soon for examination, and would be glad to receive some advice in such a case.

1. Since his hyperopic eye has given him almost no trouble, and his now myopic (?) eye only commenced to trouble him when he was 21 years old, does not this fact exclude the idea of true myopia?

2. Is it not likely that his poor vision will be found to be the result of hyperopic or mixed astigmatism?

Any information that will assist me in this case will be thankfully received.

Yours truly, C. Y. LINDER.

Question No. 2 in the above letter will be answered by the result of a careful examination with test lenses, which should have been made before any information about the case should have been sought.

Question No. 1—Myopia in one eye is not an uncommon thing, and it may develop late in life as the result of an old choroidites. *Moderate* myopia with *small pupils* does not prevent one from shooting well.

His statement means that the myopia became sufficient to annoy him or attract his attention at 21. It may have commenced to develop at the age of fifteen.

This patient has one eye with which he *reads* best. This eye should be carefully corrected for reading, and the other eye should receive such a correction as experiment demonstrates. No attempt to make a correction which will enable *both* eyes to read will be tolerated if binocular vision exists, unless the defect in both eyes is largely astigmatic.

Spherical differences of this amount will not be tolerated by those having acute binocular vision. Cylindrical differences of this amount are very frequently satisfactory.—DR. BUCKLIN.

Memorial to Bruno H. Stief.

UPON the death recently of Bruno H. Stief, the well-known jeweler of Nashville, Tenn., a meeting of a number of his friends was held in the rooms of the New York Jewelers' Board of Trade, and a committee of three, consisting of A. K. Sloan, J. Hammershlag and Wm. Bardel was appointed to draw up proper resolutions, and deliver a copy of the same fittingly engrossed to the widow of the deceased. The accompanying illustration is a reproduction of the magnificent memorial, the fruit of the committee's labors.

This memorial, which is the production of the leather department of the Gorham Manufacturing Company, is undoubtedly the handsomest thing of its kind that has come under our notice. No expense or pains seems to have been spared to make the token in every detail artistic and beautiful. It is in the form of an album, 13x16½ inches in dimensions, the background of the cover being fine black seal leather. The obverse side is covered with pieced sterling silver repoussé, worked in the style of Louis XVI. The silver is all bright finished, with the exception of the raised oval in the center, which is exquisitely oxidized about the outer edge. Upon this raised oval has been etched a portrait of the deceased, wonderfully true in every detail. About the oval is a wreath of laurel, roses and leaves, forget-me-nots, and lilies of the valley, each flower and leaf faithfully represented. Along the outer edge of the book twines a modification of the acanthus, an unusual leaf employed in silver work, though very beautiful Though the design of the cover embodies a remarkable variety of details, yet the ensemble is thoroughly symmetrical and consistent Four silver trianuglar corner pieces on the reverse side, in a style similar to the silver work on the front, finish this part of the work.



The album is lined with white moire silk, and the ten pages are held in place by a ribbon of the same material. Five of the pages are handsomely engrossed with resolutions. The frontispiece represents a tablet, spanned by a frame, bearing the words, "In Memorium." The device is appropriately ornamented by sprigs of laurel. On the next two pages is the preamble to the resolutions, which occupy three pages. The following are the preamble and resolutions:

At rmeeting of the friends of the late B. H. Stief, of Nashville, Tenn., held in New York City, May, 1890, the following resolutions were unanimously adopted:

The hand of Providence having removed from the scene of his temporal labors our friend and associate, B. H. Stief, be it

Resolved: That we deeply sympathize with those who were bound to our departed friend by the nearest and dearest ties, and join with them in mourning the loss of a true friend and upright man, and who, by his uniform courtesy, endeared himself to every one with whom he came in contact, a man who was in every way worthy of our respect and admiration.

Resolved: That this heartfelt testimonial of our sympathy and sorrow be forwarded to the widow of our departed friend,

On the following pages are the facsimiles of the signatures, numbering 108 in all.

Augustus K. Sloan, Henry Untermeyer, Jos. Hammerschlag, Wm. Bardel, Gus. F. Veith, Sim Englander, E. Loesser, A. Alling Reeves, Ingomar Goldsmith, Sam'l H. Levy, Sigmund Lorsch, Edward Dreyfuss, Max Freund, Charles L. White, E. Arnstein, A. Pinover, J. B. Bowden, Robert Welch, Jr., I. W. Friedman, Henry F. Veith, J. Bernstein, Aug. G. Schwab, Jas. P. Snow, A. Barker Snow, James T. Scott, M. Falkneau, D. E. Oppenheimer, Henry Froelich, David Marx, Ben Spier, H. Z. Oppenheimer, Isidor Elb, J. A. Lebkuecher, Hayden W. Wheeler, Louis Kahn, James E. Spencer, David N. Smith, C. C. Offerman, Louis E. Fay, A. J. G. Hodenpyl, H. Howard, Edward J. Winter, Samuel Eichberg, Max H. Kling, Leopold Rosenberger, A. J. Hedges, Enos Richardson, Sam'l Aufhauser, Emanuel Untermeyer, Eugene Unger, M. Weiss, T. W. Adams, C. C. Champenois, Louis Strasburger, Joseph F. Fradley, Jonas Koch, N. D. Moulds, Henry Heller, Charles Jacques, Geo. H. Houghton, Wm. Riker, A. J. Parker, L. C. Hurlburt, Fred. A. Jeanne, A. Wittnauer, W. Pollack, Silas W. Pickering, M. Ettinger, J. F. Crane, E. V. Clergue, Wm. R. Jackson, F. M. Van Houghton, D. Wilcox, Nat Kaiser, Jas. W. Steele, Emanuel Jacobson, John A. Hudson, Frank W. Stanbrough, Thos. H. B Davis, Leo Henle, Geo. A. Webster, W. A. Wickman, G. Hofmann, Emil Wolf, Jas. L. McPhall, Robt. G. Glover, Wm. Cooper, F. J. Boesse, Robert M. Wilcox. E. A. Bliss, Thomas Maddock Jos. B. Mayer, Geo. Fox, W. F. Hammatt, Joseph Odenheimer, Paul J. Bohme, Frank E. Knight, Geo. F. Peacock, Lee Hoffmann, A. B. Spier, Henry Freund, A. H. Leach, H. C. Lesquereux, J. Schumann, Jr., D. V. P. Cadmus, Chas. E. Dorr, F. W. Manchester, F. S. Ogilvie.

The work is a masterpiece of designing and drawing, and reflects great credit on Charles Rollinson, its designer and executor.

On August 11 the committee convened at the rooms of the New York Jeweler's Association, and it was arranged that Mr. Bardel should personally deliver the token. Accordingly, on August 16, that gentleman started for Nashville. Upon arriving he was met by D. V. P. Cadmus and J. B. Carr, manager of the B. H. Stief Jewelry Company, successors to the deceased. The party went to the residence of Mrs. Stief, where Mr. Bardel delivered the memorial, with a few appropriate words.

THE OTHER SIDE OF LIFE.

A watch is generally considered a small article, but what are we to think when we read that "four men were on the watch"?

The man who constantly wears astigmatic eye-glasses is like the Committee of the World's Fair. They are both out of site.

MORE THAN ONE SORT OF BENCH.

"There goes a man who is said to have amassed a fortune while on the bench."

"Whoever said that is utterly ignorant of the possibilities of watchmaking. One's happy if he can make a living at it."

"Oh, he's not a watchmaker; he's a judge."

PEOPLE WERE STRONG THEN.

DONNERWETTER (who is always informing others on matters they take no interest in)—Talking about watches, do you know that they have been in use only since 1461?

NOCHEINMAL—That's interesting; what did people carry before that time?

DONNERWETTER—I guess sun dials.

SHORT BUT SWEET.

JINKS—Why, Binks, what's become of your watch?

BINKS—Sat in the train next to a man who asked me ten times in one hour if I had the time.

JINKS—Well?

BINKS—Gave him the watch.

A LOVING MENAGE.

MR. CRŒSUS BULLION (aged 75)—I notice, Evelina, that you have been lately calling me "dearest swan." It's a very pretty term; what is the allegory?

MRS. CRŒSUS BULLION (aged 20, one year married)—You know a swan lives 100 years, and it seems as though you might live to that age, doesn't it?

AN OPTICAL PARADOX.

BOBBY—Mr. Popinjay, your eyesight is all right, isn't is?

MR. POPINJAY—I have excellent sight.

BOBBY—I thought so.

MR. POPINJAY—Why do you ask that question?

BOBBY—Popper was telling mamma this morning that when you are away from home, you are constantly looking through glasses.

IN A JEWELRY STORE.

"Huh!" exclaimed in disgust the watch to the hall clock, "you think because you are tall and have a handsome face that you can run me down."

"Do not set me going," angrily replied the clock; "you had better wind up your nonsense, for I am dangerous when I strike."

And the Jurgensen stopped.

AN OUT-AND-OUT HOTTENTOT.

MRS. MAGNUS SCOTT—You groaned awfully in your sleep last night, Magnus.

MR. MAGNUS SCOTT—I suppose I did; had a horrible dream.

MRS. M. S.—What was it?

MR. M. S.—I dreamt that in your eager endeavors to follow the dictates of society, you were obeying literally and to the letter its mandate to "wear nothing but bead necklaces and bracelets."

Time is the essence of all contracts, except when you endeavor to contract for a suit of clothes on time.

The shortest day is generally believed to be December 21; yet there are many who say that the day before pay day is the shortest day.

A PRACTICAL EXPERIMENT.

FLEDGELY—I have loved you Alice these—these two weeks! Do you love me in return?

ALICE—I do not know, Mr. Fledgely, but we will see. In the Princess' new book, "Love, Loving, Loved," is the passage: "When Algernon Dunbar encircled, as an equator, Marigold's dainty finger with the delicate fillet of gold, her heart leaped into her eyes, her soul quivered like an aspen leaf, and then she knew she loved him." If while you are putting on the ring I undergo the same sensations, I will be able to answer your question more completely.

WELL, HE WAS RIGHT.

FIRST PASSENGER—Do you know what time it is?

SECOND PASSENGER (consulting watch)—Yes. (And resumes his paper.)

THE THEORY OF TRI-METALLISM.

RAGGED HIDER—'Shuse me; but could you help a poor wretch wid some money?

PEDESTRIAN—"Gold and silver have I none."

RAGGED HIDER—Den give us a nickel.

A FORTUNATE CALAMITY.

CHIDWIDLER (just home from Wall street)—You look worried, Gwendolin,

MRS. C.—I did hope to hide my worry from your notice. (Then breaking down); Oh my diamonds have been stolen, all, all stolen. (Then dramatically); What shall I do? What shall I do?

CHIDWIDLER—Send for a reporter of the *Slasher*, tell him the story and then go on the stage.

IT WAS NOT A HOBBY.

PONSONBY—There's a man up-town who has at least 200 clocks of all kinds and descriptions.

POPINJAY—That's a remarkable hobby.

PONSONBY—Not so much so when you remember that he keeps a jewelry store.

HIDE TOMMY SOMETIMES.

Mr. Dashhoard Poore the other evening invited a few friends to dinner. During the repast, Howells, one of the guests, while roaring over one of Poore's bon mots, accidentally knocked one of those fashionable hock glasses off the table and it smashed upon the floor. No one seemed to take notice of the incident except Tommy, the precocious pride of his mother's heart, who exclaimed: "Oh, mamma, it's one of those glasses we borrowed from Mr. Robinson next door."

PONSONBY DID NOT KNOW OR WAS SATIRICAL.

TOMMY—Pop, what is meant by "mean time?"

MR. PONSONBY—That's the sort of time a man has when he endeavors to prove to his wife that summering two weeks in August means bankruptcy.

TRADE GOSSIP.

—Jos. A. Oudin, the southern representative of the Towle Mfg. Co., silversmiths, Newburyport, Mass., has been unable to resume his usual Fall trip, owing to a tumor which has appeared in his throat. He can hardly speak above a whisper, but hopes to find relief from an operation which will be performed in a few moths.

—A. J. Hedges & Co., 6 Maiden Lane, in addition to their usual line of rich goods, are selling largely black-enameled goods, which appears to have hit the popular taste this season. E. J. Simonson, representing the firm, left on his southern and western trip the first of last week.

—J. H. French, the jewelers' auctioneer, has just returned to New York, after a trip of several weeks to the Michigan Lakes. Fred. W. Devere and E. M. Davis, the efficient assistants of Mr. French, are conducting an auction sale for E. Borer, 218 North Clark street, Chicago, Ill.

—Tell A. Beguelin, importer of watch materials of all kinds, announces in our columns that he keeps in stock material for the popular "Bijou," "Victor," and "New Haven" watches. Jobbers who handle these watches should make a note of this for the benefit of their customers.

—Albert Lorsch & Co., 37 Maiden Lane, New York, have reproduced on slips the criticism of their "Sumatra Gem" in the August CIRCULAR five thousand fold. Any dealer who has not received one of these slips, and who desires to obtain a clear description of that remarkable stone, should communicate with Messrs. Lorsch & Co.

—The R. Wallace & Sons Mfg. Co. have added to their already immense works two buildings, one 60x60 feet and the other 30x65, both brick, one story in height. The works are running to their fullest capacity, and contain 450 employees. The company are preparing their catalogue for 1890, which will be out in less than a month.

—The salesmen of the Mt. Washington Glass Co., New Bedford, Mass., carry a complete line of samples, and visit all the principal cities, some of which should be easy of access to customers in the smaller cities and towns. The company will be glad, on application, to keep dealers posted in regard to the movements of their travelers, so that those living at a distance can readily have access to the line.

—The largest importers of pottery and glassware. china and bric-a-brac in the country are the well-known firm of L. Straus & Sons, 42–48 Warren Street, New York. In their mammoth establishment, jewelers in search of the newest and choicest bits of fancy wares from every clime will be sure to find just what they want. In addition to all the staple makes, there are also to be seen many specialties which this firm handles or manufactures exclusively. As one passes into the show-rooms at the above address the first thing that strikes the eye is an almost endless assortment of bisques, embracing the pick of the general market, as well as many of their own make. Next to these legion of graceful little figures is an array of the highly prized Flemish blue-stone ware A little further on we notice a very delicate ware called "The Elite," and manufactured by L. Straus & Sons at their pottery in Rudolstadt. It is on the Royal Worcester order, and is deservedly popular among the jewelry trade. The same can be said of the Genori ware from Italy, and the antique ivory ware, like "The Elite," also the product of the Rudolstadt pottery. In Royal Worcester, Crown Derby and Doulton Wares they have one of the largest and finest stocks to be found in the New York market. Some of the other wares to be seen here in unexampled variety are the Teplitz and Hungarian Wares, including the popular terra cotta of the last-named manufacture, and the Royal Dresden, a rich perforated ware in gold and purple. But this is not all that the jeweler bent on holiday attractions will find to interest him in this vast establishment. He will see a fine assortment of rich cut glass, both imported and of the firm's own manufacture; onyx clocks and onyx tables; Paris real bronze-mounted vases; hall clocks, bronzes of all descriptions; and, especially to be commended, two hundred different designs in Carrara marble. This mammoth line of art goods, brought from the world's marts, is being supplemented constantly with the arrival of every steamer from Europe.

—In answer to a correspondent we may state that Messrs. Sartorious & Co., of 28 Barclay street, import the best quality of jewelers' enamel, as well as special paints and brushes for enameled jewelry.

—S. B. Mann, well known in the trade through his one time connection with some of the largest houses, among which are J. T. Scott & Co., and the Rockford Watch Co., is now with Aikin, Lambert & Co., where he will be pleased to welcome his many friends.

—The Waltham Watch Tool Co.'s new and commodious building at Springfield, Mass., is now nearly completed, and the company expects to move into it by the first of September. In the meantime they are preparing a new catalogue that will contain matter of more than ordinary interest to watchmakers.

—S. C. Howard, of the Sterling Company, and Mr. Wientge, the superintendent, have just returned from a two months' trip abroad, having passed most of their time on the continent visiting the art museums and the *ateliers*. A glance at the company's additions to their already large and beautiful line will serve to show that the trip of these gentlemen has proved a source of pleasure to themselves as well as profit to their patrons.

—We call the attention of the trade to the advertisement of Samuel C. Jackson. Since the death of Mr. Jackson the business has been under the management of Theodore C. Steinhaus, who acted in a similar capacity during the lifetime of the deceased. The business is maintained in the front rank by the careful attention to orders, as well as the enterprise exhibited in presenting the newest styles in every thing pertaining to jewelry cases.

—During August the CIRCULAR had pleasant visits from C. S. Stifft, of Little Rock, Ark.; Edgar P. Wheeler and brother, of Salem, N. J.; Chas Garratt, of Hot Springs, Ark.; John M. Clower, of Cleburne, Texas; W. J. Stahl, recently with J. H. Johnston, New York, but now with Harris & Co., Washington, D. C.; Burr Brothers, Bay Shore, N. Y.; C. Wright, of Toronto, Can., and the representative of Chas. W. Lucius, Cincinnati, O.

—The business of the late F. W. Gesswein, it will be noticed by a reference to our advertising columns, is still continued at the old stand, 39 John street. The business is now under the sole management of William Dixon, and the trade will find here the same thorough methods in business that characterized the late proprietor. The factories are also under the same efficient management, and everything in the way of jewelers' tools, from a steam-engine to the smallest saw or file, can be supplied here on the most satisfactory terms.

—The Alvin Mfg. Co., 860 Broadway, are exhibiting to the trade a species of work, which is exciting the wonder of all who have seen it. It is the application of their well-known electro-deposit process to tea-sets, pitchers, etc., of white porcelain, the silver being overlaid in delicate arabesque, flower and leaf designs, without an irregularity or break in the outlines. The effect is rich and beautiful beyond compare. The Alvin Co. are receiving many orders for these goods, and will illustrate some specimen pieces in the next issue of the CIRCULAR.

—Fowler Bros., 198 Broadway, New York, have been making extraordinary preparations for the Fall trade. They are now exhibiting one of the handsomest and most unique lines of match-boxes, bonbonieres, vinaigrettes, and other novelties in sterling silver that has ever come under our notice. The designs are wonderfully original and ornate, while the chasing is in the highest style of the art. Fowler Bros. show about thirty new patterns of these match-boxes, also a similar variety of patterns in ¼ karat gold novelties that need to be seen to be appreciated.

—The leading jewelers of Toledo, Ohio, have started a social organization, known as the "Jewelers' Club." The object of the club is to meet once a month socially, and talk over interests pertaining to the jewelry business. At their last meeting the *New York World's* scheme of giving away wholesale prices of watches (under the false representation that the jewelry trade were charging exorbitant prices for these goods) was thoroughly talked over, and, of course, denounced as an unprincipled piece of business, not only on the part of that journal, but on the part of the trade that would stoop to furnish them with their products. It was claimed that the watch and case companies ought to protect the retail jewelers, who sell most of their product. At a special meeting, the following resolution was adopted: *Resolved*—"That the jewelers of Toledo will not advertise, or recommend to their customers, any of the movements or cases being furnished to the *World*, or any other scheme that tends to take the watch business out of the legitimate channel" F. J. Roult is president, and J. G. Rapp secretary of the club.

—H. F. Barrows and his son, Ira, sailed to Europe on August 6 by the steamer *Majestic*.

—A. Walter, manager of the firm of A. Berger & Co. for the United States, arrived from his European trip on the steamer *La Bretagne* on August 7.

—T. Le Boutillier, of the well-known house of Le Boutillier & Co., importers of Royal Worcester and other fine pottery, arrived from Europe on August 4 by the *Servia*.

—David Keller, of Keller, Ettinger & Fink, 24 John street, New York, who has been ill for some weeks past, has recovered his good health, and is attending to his multifarious business duties.

—The Middletown Plate Co. illustrate elsewhere a few of the new patterns they have prepared for the season, which have already called forth many words of praise, both as to quality and finish and beauty of design.

—The attention of our readers is called to the advertisement of J. W. Richardson & Co., manufacturers of solid gold emblematic goods, who have recently published an illustrated catalogue of goods of their manufacture. The catalogue will be sent free to jobbers (and none else) on application, as Richardson & Co. sell only to the jobbing trade.

—The annual supplement of the *Constitution-Democrat*, of Keokuk, Ia., issued August 1, contained on its front cover a view of Main strest, in the foreground of which the jewelry store of T. R. J. Ayres & Sons formed a conspicuous figure. The journal contained also a highly complimentary notice of the firm's business, a separate illustration of its store and a representation of the Ayres' residence.

—The excellent qualities of the loop watch keys manufactured by A. N. Clark, of Plainville, Conn., have created a demand for those goods from every part of the world. These keys are made from every part of the world. These keys are made from steel of the strongest fiber, hardened to spring temper. Dealers who are not familiar with them—and they must be few indeed—should send to the manufacturer for price list and samples.

—Considerable indignation is expressed by retail jewelers of Montreal, Canada, on account of the rigid search of their baggage made by the customs authorities on the return of the dealers from trips to England. Heretofore the bonds of resident dealers have been considered sufficient, but on account of reports of smuggling circulated by a few unsuccessful competitors of the better houses, the closest scrutiny is now made by the authorities.

—At this late day it seems unnecessary to extol the qualities of the standard dust-proof watch keys manufactured by Kendrick & Davis, of Lebanon, N. H. They are too well known to the trade. But the following facts may be reiterated, that the heavy demand for these keys which the manufacturers have experienced since their introduction, still continues unabated, and that considering their excellent quality they are the cheapest keys in the market.

—Charles S. Pine & Co., Providence, R. I., ship their goods to Central America, Germany, France and England. They ship only through exporters, and send no goods direct. The principal demand in those countries is for mourning bracelets. One style, called the "Mary Anderson" bracelet, is the leading seller. It is an enameled bracelet with gold edges, and also has a considerable sale in this country.

—Ferdinand Fuchs & Brothers is the name of a new firm organized by Ferdinand Fuchs, senior member of the late firm of Ferdinand Fuchs & Bro. This new firm will devote themselves to the manufacture of sterling silverware exclusively for the trade, and will soon place upon the market a line of hollow ware, toilet goods, etc., etc., all new and original designs, which they will offer for the fall trade. Their factory will be located at 808 and 810 Greenwich street, New York. I. Sideman will represent the house on the road.

—In silver novelties Cattelle & Decker, 20 Maiden Lane, New York, present a large assortment of useful as well as ornamental jewelry adapted to the better class of trade. Among others, they have a line of rings in virgin and oxidized silver mounted with turquoises, agates, sapphires, garnets and rubies in doublets, heart lockets mounted with precious stones, and heart necklaces with the same. Tablets for ladies' use in new styles with appropriate quotations, and stamp boxes for everybody's use we are told find a ready sale. An immense variety of other articles which it is impossible for us to enumerate make up their stock of silver.

—A. Saltzman, of the late firm of Saltzman & Co., has entered the employ of Tell A. Beguelin.

—The Usine Genevoise de Degrossissage d'Or, of Geneva, Switzerland, has lately completed considerable improvements in their patented anti-magnetic compensation balances, which, it is claimed, enable these mechanisms to obtain far superior compensation results than those previously produced. Notwithstanding the late successive uses in the cost of the metals employed in the alloys used for the manufacture of these balances, the manufacturers' price list remains unaltered.

—Hutchison & Huestis, Providence, send gold rings to Canada. These rings are made smaller than those used in this country, and the settings are smaller. A ring with a large cameo setting, which sells readily in this country, has no sale whatever in Canada. Rings that are considered small gentleman's rings in this country are considered large size there, and from this it is presumed that the custom among the Canadians is to wear the ring on the little finger instead of on the third finger, as is customary in this country. These goods are sold through the jobbing trade, and it has been found very hard to introduce them, as the English trade has been so long established that even lower prices do not have as good an effect as could be wished for, although these rings are gradually working their way to the front.

—Foster & Bailey, Providence, ship goods to jobbers in Germany, France, England, and South America. Their goods reach Constantinople and even Japan through the New York exporting houses with whom they do business. Novelties that start in this country and run six months or a year have no sale in foreign countries, and nothing but staple goods—such as plated watch chains, cuff buttons and stone charms are exported by this firm. These goods, on which there is considerable machinery work, can be sent to foreign markets to compete with local trade on its own ground; but the finer class of goods, where hand work is required, such as lockets and solid gold goods, cannot be placed in the foreign market in competition with local manufactures.

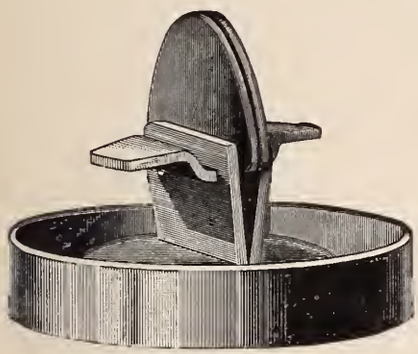
—Kent & Stanley, Providence, chain manufacturers, about a year ago introduced their gold-plated chains in foreign markets. They now have an agent who has headquarters in Paris, and travels through the principal cities of England, France, Germany, Turkey and Belgium, selling goods to the retail dealers direct. The call in these countries has been mostly for gold-plated chains of the best quality, as the best home manufacturers make only solid goods and cheap plated chains, and the plated chains of high grade fit in between and command a ready sale. This firm also has an agent in South America, who travels selling to the retail dealers in the largest cities of that continent.

—On July 9, the London horological trade lost one of its most prominent figures in the person of Victor Kullberg, the celebrated maker ofchronometers and watches, who died at the age of sixty-six years, from pleurisy. The deceased was a native of Sweden, and in his youth he was apprenticed to a watchmaker. He afterward went to Copenhagen, where he was employed by L. U. Jüergensen. He moved to London in 1851, and soon obtained employment as marine and pocket chronometer escapment maker. In 1856 and 1857 Mr. Kullberg began making keyless watches.

He was much interested in the effects of temperature on fine timepieces, and in 1860 he received the silver medal at the Horological Exposition at Besançon; soon afterward sent a chronometer with a balance of his own construction to the Royal Observatory, where it was given a place among the first ten. In 1862 he won first and second prizes in the observatory trials, and at the exhibition of the same year received a medal for the general excellence of his productions. In 1864 he won first prizes at the Greenwich trial, and in the same year received the silver medal of the Royal Scottish Society of Arts. He received gold medals at the principal exhibitions from then until 1873, when his new compensation balance received the first and third awards. During that year he was awarded, at the International Exhibition in Vienna, the Grand Diploma of Honor, and in 1874 was appointed court chronometer maker by the King of Sweden and Norway, who decorated him with the order of Wassa. In 1888 two of his chronometers stood first in the Greenwich trials, and in 1889 he received a gold medal at the Paris Exhibition. In 1881 Mr. Kullberg was made an honorary member of the Society of Arts in Geneva, Switzerland. He was for twenty-seven years a member of the Council of the British Horological Institute, and in 1862 was made a member of the Society of Arts, of London. He was also a member of numerous other scientific bodies.

WHY

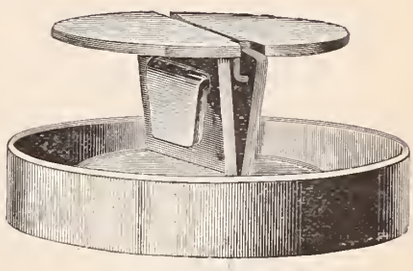
YOU SHOULD BUY THE



OPEN.

ANTI-SWEAR

CUFF BUTTONS.



CLOSED.

BECAUSE They are the only line of Cuff Buttons **WHICH IS NOT SOLD BY THE DRY GOODS TRADE,** thereby preventing ruinous competition.

BECAUSE they are simple and durable, having no steel or composition springs to get out of order and every pair is warranted.

BECAUSE they are automatic in their working, both in inserting and taking out of the cuff.

BECAUSE they can be inserted in a cuff or taken out **FASTER THAN ANY BUTTON EVER MADE.**

BECAUSE they were endorsed and recommended by the **OHIO RETAIL JEWELERS' ASSOCIATION,** also

BECAUSE we shall place on the market the finest and largest line of patterns of Buttons this Fall, ever offered.

Before purchasing elsewhere **WAIT AND SEE THEM**; or **SEND US AN ORDER** for an assortment on approval.

J. T. SCOTT & CO.,

SOLE MANUFACTURERS,

4 Maiden Lane, New York.

—The travelers of Koch & Dreyfus, 22 John street, are all sending in encouraging reports. Business with this house has doubled in the past few months.

—L. Combremont, importer of watch materials, 2 John street, has just returned from a business trip abroad, and will soon call upon the trade with his well-known line of tools and materials.

—Lawson & Van Winkle, 11 Maiden Lane, are showing some very pretty moonstone and conch shell hearts set in diamonds, for which they report a large demand, both for pendants and scarf and bonnet pins.

—Charles Jacques, importer of clocks, 2 Maiden Lane, New York, has just received a line of very fine rich English Hall and Marble Chiming Clocks Mr. Jacques imports clocks of every description and carries a complete line of French and English clock material.

—Ludwig Nissen, of Ludwig Nissen & Co., 18 John street, returned from his European trip on August 22d, ready to buckle down to business again. He made large purchases of diamonds while abroad, which those in search of the best the market affords, at the right price, would do well to inspect.

—Hollinshed Bros., the well-known jobbers, of 804 Chestnut street, Philadelphia, are prepared for the Fall trade with a large and well selected stock of goods. This fact, together with their strict adherence to the principle of selling the retail jewelry trade only, is bearing fruit in a rapid increase in their business.

—Hollinshed Bros., 804 Chestnut street, Philadelphia, who are residents of the second ward, Camden, N. J., have received an order from the head of the Navy Department to furnish the silverware outfit for the new cruiser *Philadelphia*. This same firm furnished the *Baltimore* a complete outfit a few weeks ago.

—The best place in Chicago for any jeweler, who is contemplating opening up business, to purchase his optical goods, is at the Geneva Optical Co's., who make a specialty of furnishing entire optical outfits. This firm are always glad to have their experts explain the modes of handling the different articles in their line.

—One of the neatest tools at present on the market is the little jewelry tool manufactured by Thomas & Sisley, of Elgin, Ill It is very simple in construction, fits any lathe, and is claimed will accomplish the cutting of the hole and the setting of the jewel in one-half the time heretofore taken. They have descriptive matter, which will be sent to the trade on application.

—Oskamp, Nolting & Co., Cincinnati, O., are expressing their mammoth new catalogue to the jewelry trade. It is one of the most complete and useful compilations of the kind ever made, and any retail jeweler who has not received one should send his business card to the firm at once with an application for the book. The demand for it is unexpectedly large.

—S. F. Myers & Co., 48–50 Maiden Lane, have an announcement in this issue, offering a reward of $1,000 for the arrest and conviction of the person who started the report that they sold watches to the New York *World*, directly or indirectly, to their knowledge. They declare the whole statement to be without foundation, and make the above offer in the hope of tracing up the slander.

—The Roy Watch Case Co., 17 Maiden Lane, New York, have adopted a new tag as an emblem of their exclusive use of hand engraving on their popular cases. It is a representation of a hand, bearing their trade-mark "Roy" on the wrist, and having the words "engraved by hand" printed on the palm. All Roy cases will hereafter be identified by these tags, and are guaranteed to be only hand engraved.

—The New Jersey Lamp and Bronze Works, whose factories are at New Brunswick, N. J., and New York Salesroom at 91 Duane St., have put upon the market a new bronze piece entitled "The Fisherboy", which they claim to be the cheapest real bronze of its size to be found in the market to-day. They have a large assortment of the most desirable patterns in bronzes, lamps, sconces, etc., at prices that will well repay inspection.

—The growing popularity of cut glass in general, and the increasing demand for their own particular line of cut glass, has prompted the well-known house of C. Dorflinger & Sons, 36 Murray street, to enter upon a course of refitting and improving their show-room at the above number. New iron ceiling is being put in, electric lights will lend brilliancy to the dazzling display of the rich wares of this house, wares unsurpassed for purity of color and perfection of cut. The Messrs. Dorflinger cordially invite the jewelry trade, when visiting the city this Fall, to call at their show-room and inspect their stock, the completest and choicest in the market.

—J. B. Wood, buyer of Chas. F. Wood, arrived home on the *Teutonic* an the 13th ult. Mr. Wood purchased largely in Europe, and will during the Fall months receive large importations of precious stones.

—The Hinckley Manufacturing Company at Aurora, Ill., will increase its capital stock to $25,000. This industry has grown from a small beginning to one of respectable size. The beginning was when C. C. Hinckley left the Aurora watch factory some years ago and started a little machine shop of his own.

—The "O. & Z." interchangeable initial rings, lockets and sleeve buttons, by their excellent quality and practicability continue to be one of the most popular lines of jewelry in the country. It is the constant endeavor of the manufacturers, Odenheimer & Zimmern, 46 Maiden Lane, New York, to bring their goods to the highest standard of perfection. The jeweler who misses an inspection of their new styles in these goods is working contrary to his own interest

—One of the largest lines of silver novelties is that manufactured by F. M. Whiting & Co, North Attleboro, Mass. Some of their latest novelties for the Fall trade are shown in this issue of the CIRCULAR. Their goods are all tasteful in design and moderate in price—in short, it is one of the most salable lines in the market. Dealers coming to New York this Fall should call at their salesroom at 857 Broadway (entrance on East Seventeenth street), and inspect their large line of samples, the latest addition to which is tea-sets in engraved, repoussé, and all the popular styles.

—J. F. Fradley & Co., manufacturers of canes, umbrellas, opera-glasses, and gold and silver novelties, 23 John street, illustrate some of their new goods on another page of this issue. The silver-mounted opera-glass bag, which is the latest novelty in this line, is an exceedingly attractive and useful article, and will be sure to command a large sale among the ladies this Fall; it is finished in any desired shade of plush. In toilet-sets and novelties the firm show a beautiful array of goods in chased and repoussé work, all in the very highest style of the jeweler's art. The latest addition to their line is a large variety of patterns in silver-mounted powder puffs, a very desirable accessory to a lady's toilet.

—We will not undertake to describe or enumerate the novelties and new features in opera, field, marine, opera glass holders, eye-glasses etc., which the Spencer Optical Manufacturing Co., are introducing to the fall trade, but it may be predicted that their opera glass holders with kid covered clamps and handles of new and tasteful designs will assume a prominent place among this class of goods. These holders are made in a great many varieties and the clamps are so arranged that there are no springs to get out of order; this is a great achievement in holders. The company's new eye glasses with spiral spring are in great demand. Don't fail to send for their catalogue of opera glasses and holders prefaced with an article on their structure and uses.

—The Mt. Washington Glass Co., New Bedford, Mass., with store at 46 Murray street, New York City, are out with their new lines of rich cut glassware, embracing the "Puritan," "Wheeler," and "Radiant" patterns, and showing at the best the brilliancy of their fine crystal metals. The new and original "*Royal Flemish Ware*," of varied designs in high art, attracts the attention of the most critical: it is novel and beautiful, and graces the counters of the finest stores in America, while the "*Albertine Ware*," in the new shapes and decorations is more popular than ever. This company are increasing their plant to supply the enormous demand for their line, and have also recently applied a newly perfected fuel apparatus to their furnaces. The trade, when visiting New York, can pass a short time profitably inspecting their samples at 46 Murray street, where they are represented by Wm. H. Lum.

—The proposition of the Nashville Trust Company, administrators of the estate of the late B. H. Stief, of that city, to pay the creditors of the estate at once, if "a liberal discount" is allowed from their claims, has provoked much unfavorable comment from those interested. The administrators assert that the law of Tennesee gives them two years and a-half to wind up the affairs of the estate, and that the assets are not in such shape as to be readily realized upon. This claim naturally surprises the creditors, who regard Mr. Stief's estate as ample for the immediate payment of all his obligations, and think that, as administrators of his estate, the Nashville Trust Company holds also in trust the reputation for high commercial honor which distinguished the late jeweler, and in loyalty to his memory should not take advantage of the law's delay to compromise the fair name of the dead.

—Austin & Son, the old Dallas (Tex.) jewelry house, have moved from Main street to their elegant new quarters at No. 1,330 Elm st.

—A special edition of the Stockton (Cal.) *Mail*, issued last month contained an illustration and description of the magnificent residence of C. E. Owen, the well-known jeweler of that city.

—The third annual fishing excursion of the employees of the Essex Watch Case Co., was held on Saturday, August 2. The steamer *Joanna* was chartered, and a highly enjoyable time was spent by the participants.

—S. F. Myers, of S. F. Myers & Co., has been elected one of the six Honorary Presidents by the United Italian Societies of New York, for their National Gathering and Festival on Sept. 12th in New York in commemoration of the unity of Italy.

—The Electric watch sign now being placed on the market by the Joliet Electric Clock Co., is quite a novelty. It is attractive and durable and it is claimed by its makers will keep perfect time. The price is reasonable and places the sign within the reach of all.

—The Derby Silver Co., will during September issue a new and complete catalogue which will contain representations of the latest patterns in their varied lines. The book may be obtained upon application either to the Company's salesrooms at 25 Maiden Lane, New York, or to their factory at Birmingham, Conn.

—Aikin, Lambert & Co. are showing some new polished oak show cases for pens. This move is in line with the firms' custom of furnishing their patrons with cases for displaying gold pens of their make. These new cases have square fronts and may be constructed to harmonize with the balance of office fixtures. Heretofore the cases have been of metal with oval fronts.

—The Jewelers' Building and Loan Association will hold another sale of money, September 8th, at their rooms at 48 Maiden Lane, New York. The originators of the association state that the success of the association has been phenomenal, owing to conservative management, small expenses and large profits. The present membership of the association is about two hundred, and it is constantly being augmented.

—The stock of complicated watches of Mathey Bros., Mathez & Co., has never been so thoroughly complete. The demand for their new split-second watch and for their new silver repeater is increasing. All the goods that this house manufacture are strictly examined and tested before being put on the market; they consequently seldom give the annoyance to the jewelers that most complicated watches are apt to do.

—The removal of H. Oppenheimer's Sons from Chicago to New York has proven eminently successful, if we are to judge from the statement of the firm of Weis & Oppenheimer that their volume of business during June, July and August was far ahead of that of the same months last year. This firm carry a complete line of gold jewelry, mostly 14-k. in quality, and of their own manufacture. Their handsome offices in the Corbin Building, 192 Broadway, should be visited by every dealer coming to New York.

—The F. Kroeber Clock Co. have just issued a new price list, dated September 1, 1890. It is to go with catalogue 1888–1889 and supplement 1890, and it cancels all previous lists. The success with which jewelers have met in handling fancy goods and bric-a-brac, has induced this company to increase their importations of these goods, and they are now prepared to offer a fine and extensive line of such goods, comprising expensive and low-priced articles, personally and specially selected for the jewelry trade. The choicest and newest articles from France, Germany, Austria and Bohemia are concentrated in their stock.

—M. J. Paillard & Co., manufacturers of musical boxes, are responsible for a vast number of the improvements that have been effected in these mechanisms. One of the recent improvements which they have added to their list is known as the Van Fleet patent. The purpose of this invention is to prevent the box from stopping in the middle of a tune. This stopping at inopportune places has for years been recognized as a grievous fault in musical boxes. In the salesrooms of this firm at 680 Broadway, New York, may be seen an entirely new manufacture of musical box, namely the Interchangeable Plérodièneque; the plérodièneque which is capable of playing an entire overture of an opera, is not new but the interchangeable feature is. Another improvement which this firm have recently made resides in the substituting of a wheel for the large spring in long march or half hour boxes. By this arrangement the working mechanism is simplified and the cost of manufacture lessened. Mess. Paillard & Co are also utilizing electricity in musical boxes. They make a specialty of repairing musical boxes for the trade, having a large force of mechanics constantly at work in this department of their business.

—The fall stock of new goods manufactured by Carter, Sloan & Co., 15 Maiden Lane, New York, includes many lines which have few equals. The efforts of this house are not confined to any special lines of jewelry; there is little or nothing in gold goods that they do not produce. To specify the various articles would occupy too much space and might confound the reader; suffice to say that there are brooches, lace pins, scarf pins, bonnet pins, sleeve buttons and links, bracelets, gold thimbles, glove buttoners, charms, gantelines, silver purses, gold hairpins, bangles, children's studs, etc. In each superior quality is plainly discernible, and the new styles are of a character calculated to impress the observer.

—From time to time, during its construction, the attention of our readers has been called to the new factory of the Elgin Watch Case Co. This factory is now practically completed, and running daily with a large force of workmen. The vice-president and general manager of the company is T. W. Duncan, a gentleman well-known and highly respected by the jewelry trade. Mr. Duncan has an able assistant in superintendent T. A. Hopkins This factory, although only in its infancy, gives every promise of becoming a prosperous institution—in fact one of the principal of Elgin's industries. There are employed at present in this factory something over one hundred skilled workmen. The company are rushed, having orders beyond the capacity available. The company is a wealthy one, and the permancy of the institution is assured. It may be well to state that it is their intention to turn out nothing but the best goods.

—"I think it's the only way to increase business," said John A. Riley, of 860 Broadway, New York, when I remarked that he seems to be ahead of other manufacturers in producing new goods. This answer is undoubtedly a truism. I had reason for my remark, for Mr. Riley displayed for my inspection a new line of hair-pins, with forget-me-not designs, plain and gemmed; they are very handsome, and will without doubt sell well. Then a beautiful line of brooches, composed of four convolutions of forget-me-nots, some having a diamond in the centre and others having six coral lobes, attracted my attention; then I remarked the attractive effect of a new line of brooches of forget-me-not designs, with a heart of ameythyst or topaz, some surrounded with pearls. The idea of the forget-me-not seems to have been a happy one, for it is not only applied with good effect in the lines mentioned, but its employment in miniature brooches produces an effect which one would think could not be exceeded for beauty. The tiaras or grecian fillets, which Mr. Riley recently placed in the market have acquired a popularity that surprises one, for such fine jewelry. They are particularly adapted to the coming season—the season of receptions, parties, balls, etc. Nothing in head ornament ever produced is equal to these articles in beauty and appropriateness.

—One of the most important and profitable branches of a jeweler's business, at all times, and during the coming season especially is art pottery and bric-a-brac. These lines have come to be looked upon as necessary adjuncts of all progressive jewelry stores. In appreciation of these facts, Bawo & Dotter, 28, 30 & 32 Barclay street, New York, who have for some years past done a large business with jewelers, have this year increased the several lines of pottery, etc. adopted to be handled by such dealers. Passing through the firm's immense establishment, we note an extensive line of bisque figures representing new subjects in new decorations; entirely new and handsome are bisque fruit stands, bisque flower stands reprsenting a well or Louis XVI sleigh with figures, gondolas with figures; these bisque works are in four decorations, gold, gold and flowers, blue, and blue and flowers; a pretty bisque flower stand is a mantel with lady and gentlemen before it; this may be used as a center piece on a mantel instead of a clock. Further on we come to a large new line of Doulton in dark blue decoration, and in new shapes; this ware comes in jugs, vases, biscuit jars, salad bowls, dainty tea pots, sugars, creams, etc. Then the handsome Royal Dresden in dark blue and gold and white and gold decorations, in cake plates, comports, plates, tea pots, sugars, creams, cups and saucers; extremely pretty are some Doulton candlesticks with leaf-shape stands. Proceeding further, we come to an extensive display of the best of all wares, Royal Worcester; here we note that a large variety of the pieces have a very handsome decoration in a field flower, which evidently grows wild and admits of many soft and delicate shades of color, and twining stems; it is undoubtedly one of the best decorations applied to this ware, and is entirely controlled by Bawo & Dotter. This decoration is applied to pitchers, jugs, biscuit jars, rose jars, fancy wares, salad bowls, cups and

saucers, in fact in nearly all the variety of articles in which the ware is made. Besides the Royal Worcester with this decoration, the firm displays an extensive assortment of new shapes with other decorations. Without going into details regarding the other lines adapted to the trade we may specify, Carlsbad ivory ware, which approaches the Royal Worcester in appearance but is much cheaper; Foleyian ware in new gold flower decoration in quite high relief, in jardinnieres, center pieces, vases and jugs; real Hungarian ware in open lace work, containing a unique line of jewelry boxes, representing a sofa, old arm-chair, foot stool or piano, and flower stands, representing a cradle; no manufacturers can excel the old Hungarians in uniqueness of shapes; Moorish ware in new shapes; Old Hall pottery, one of the oldest of ware, in handsome decorations and unique shapes; Bonn faience in large jars to be placed upon pedestals, something entirely new; a large line of Bela art ware, a new ware with well defined and handsome decorations; Royal Devon, the cheapest of fine wares, though very attractive; the pretty and delicate Pointons all in new decorations and shapes; Adderly and Terplitz. In fact if a man spent a whole day in this establishment he could ever find something new to attract his attention.

—Among the recent arrivals from the European diamond marts was L. Tannenbaum, of L. Tannenbaum & Co., importers of diamonds and precious stones, 63 Nassau street, New York. Mr. Tannenbaum had been absent for two months inspecting the foreign markets, and by reason of his long experience and intimate knowledge of the conditions of the diamond markets, and the requirements of the trade on this side of the water, he succeeded in securing large invoices of goods at very advantageous terms. Those in search of anything rare and choice, as well as buyers of staple goods, at the proper figure, should call and inspect these purchases, which are arriving now by every steamer. In an interview with the editor, in reference to the state of the markets abroad, Mr. Tannenbaum said that in London he found the market quite tranquil, despite the assertions of some that the prices were continually going up. As a matter of fact, he said, goods were no dearer now than they were three months ago when he last visited the British metropolis. "One thing I will say, however," said Mr. Tannenbaum, "and that is that colored stones are very, very scarce, steep in price and exceedingly hard to obtain. This undesirable state of affairs, in my opinion, was brought about by our new Silver Bill, as the natives in India now have to pay more for their rupees, making all their commodities about twenty per cent. higher, at least. As for diamonds the most desirable goods are very scarce, as usual, but prices are good. From my own observations, not alone in London, but in Paris and Antwerp, I am strongly of opinion that the market will remain firm; I failed to find any indication that would lead me to believe that prices would go up in the near future. I may as well take this opportunity of informing our patrons and the trade at large that I was fortunate enough in securing absolutely the largest and finest assortment of precious stones, both rough and polished, that has ever been shown by our firm.."

Among the Watch and Clock Companies.

—President Harrison, it is said will soon carry an Otay watch.

—All 11-jewel movements made by the Hampden Co. are now in settings, which add greatly to the appearance of the watch.

—Master Watchmaker D. H. Church, of the American Watch Factory, has been appointed second assistant superintendent by President Fitch.

—The New Jersey Clock Company, at Jersey City, has been incorporated with a capital stock of $100,000, for the manufacture of self-winding clocks.

—The new three-story addition to the Hampden Watch Factory is being rapidly pushed to completion; extra steam boilers have been ordered for both that and the Dueber factories.

—Penniman & Duke, the selling agents of the Otay Watch Company, have adopted as a trade-mark for the Otay Watches a grizzly bear in gold, emblematic of the pioneer days, and the great seal of California.

—The Trenton Watch Co., it is said, will plaec their new movement in the market during September. This movement is a seven, ten and fifteen jewel one, and is adapted to both open face and hunting cases.

—On August 1, the number of hands in the American Watch Factory was 2,739. Movement No. 5,000,000 is now going through the department of the factory, and its completion will probably be marked by appropriate ceremonies.

—C. G. Schellenberger, the would-be watch factory founder, who has been unsuccessful in locating a watch factory at Washington, Ill., is now trying for the second time to have capitalists in Dubuque, Iowa, assist him to start a factory there.

—J. W. Hurd is said to be engaged in stirring up the citizens of Red Cloud, Neb., to start another new watch factory. With a subsidy of $60,000, Mr. Hurd promises to establish a plant employing 150 hands, with a capacity of 50 movements daily.

—"The Waterbury," published by the Waterbury Watch Co., still continues to be one of the liveliest and most entertaining of journals issued by private concerns. Its pages are filled with comic sketches, cartoons and paragraphs, besides news and gossip.

—The E. Howard Watch and Clock Co. have an order for 1,000 school clocks from New York city, and will commence work on them early in September. A four-dial tower clock is now in course of construction for the English High School at Boston Highlands.

—Watch No. 5,000,000, now nearing completion at the Waltham factory, will be presented to Treasurer Royal E. Robbins. It is a 16 size, first quality movement, and will be finished without regard to cost. The presentation will, in all probability, be made with appropriate ceremonies.

—The Seth Thomas Clock Co. have furnished movements for advertising clocks to John Finzer & Bros., of Louisville, Ky., manufacturers of various brands of tobacco, who are giving them away to their customers. The frames of the clocks are of wood, painted in imitation of cherry, with prominent bronze letters in a circle..

—Thirty watches per diem are being produced at the Otay Watch Factory. The factory is running mostly on full jewel, adjusted nickel stem wind movements. Orders for watches are said to be coming in from every quarter, and work is being driven ahead in every department. Ninety-one is the last report of the number of hands employed in the factory.

—Isaac B. Woodruff has been elected President of the Wm. L. Gilbert Clock Co., to succeed the late Wm. L. Gilbert. The new president has been connected with the company since 1851. He has been vice-president and general manager for several years. George B. Owen has been elected general manager, and James G. Woodruff has been chosen secretary and a member of the board of directors.

—The Lancaster Watch Company is now under the surveillance of the court, and is bonded for $306,000. The liabilities are $90,000. R. Ramsay Patterson, of Philadelphia, has appointed his attorney, H. B. Swarr, assignee of the company, while a number of the stockholders ask for the appointment of a receiver to supplant the assignee. Things with the stockholders are still in an uncertain condition.

—At the annual meeting of the Cheshire Watch Company held last month, the old board of directors were re-elected, with the addition of Samuel E. Elmore, president of a Hartford bank, in the place of Judge Cornwall, deceased. Decided action was taken in regard to recapitalization, and a movement was inaugurated which will result in the resumption of manufacturing on a larger scale than ever.

—The Waltham *Free Press* says: "The craze for fancy dials has struck the Western people, and the factories are now at work upon ornamental designs. The American has for years had quite a run upon this line of goods, and Foreman Hull has produced some of the most beautiful and unique dials ever seen. There is scarcely a week passes that something original in dial painting is not forthcoming.

—The old suit of the Waltham and Elgin Companies against the Aurora Company has at length been settled. This suit was an action to restrain the latter from infringing on the Church stem wind mechanism. The plaintiffs were victorious in all the claims made by them, the judge sustaining the Church patents owned by the Waltham and Elgin Companies, and ordering an injunction and an account under the five claims sued on.

—The Dueber Watch Case Co., with their new and complete line of gold cases,are surpassing their heretofore high record, both as to quantity and quality of their cases. The factory's output in July was the largest on record for that establishment. There is not in America any one institution that has more elegant business offices than the general offices of the Dueber and the Hampden factories. When we state that the carved cherry mantels alone in the Dueber offices cost over $2,000, some idea can be formed of the palatial manner in which Mr. Dueber has planned and arranged things in his watch palace at Canton.



MR. L. TANNENBAUM has just returned from his regular Summer trip to Europe. He was fortunate in securing one of the finest stocks of Diamonds and Colored Stones that the house has yet imported.

The prices at which these goods were bought were such as will enable us to give our customers the benefit of rates comparatively unaffected by the recent advance.

L. Tannenbaum & Co.

Diamonds and Precious Stones,

25 HATTON GARDEN, LONDON. | 65 NASSAU STREET, NEW YORK.

—The new Sterling (Ill.) Watch and Clock Factory was destroyed by fire Sunday night, August 17. The factory had been idle for two or three weeks, and what could have caused the fire is not known. Nearly all the machinery, materials and unfinished clocks on hand were destroyed, entailing a loss of $35,000, upon which there is $15,000 insurance. The fire was confined to one floor and the roof, the damage to the building being $3,000. The company were said to be in debt to Chicago parties to the extent of $12,000.

—The Aurora watch factory as it stands was sold on Aug. 30th, under foreclosure to a syndicate of Aurora capitalists for $34,000. Those who appear in the transaction as purchasers are James Q. Mason, E. W. Trask and F. D. Seamons. They announce that they will start up the institution again as soon as possible and overtures have already been made to some of the old employees to secure their return. In Canton it is understood that Messrs Rood and Cain are interested in the purchase, agreeing to run the factory for two years in Aurora.

—The following telegram published last month in a contemporary was denied by E. J. Schofield, the New York representative of the Elgin Company: "Eastern capitalists have purchased for $24,000 a site in West Berkley, a suburb of San Francisco, Cal., on which it is said the Elgin National Company, of Elgin, Ill., will establish a branch of its works The purchase includes 13 acres of land, with the watch factory building erected by the late W. C. Ralstan, and it is reported that the branch factory will at once be provided with the necessary machinery and be put in operation.

TO PUT UP A TOWER CLOCK.

Movement.—Tower clock movements should always be placed upon a firm floor or platform, and in such a position that connections can be made with the dials, either above or below—*above* is the best. The connection to the dial gearing is made from the upright shaft on the movement with rods and the universal joints. The universal joints enable the connecting rods to be run on an angle, avoiding bell or other obstruction.

The Connecting Rods are usually made of tin pipe soldered on to the brass tubing on the universal joints. If the rods are short they can be made of dry straight-grain pine wood, with the ends fitted to the brass tubing and fastened with screws. The rods should be of such length as to allow the end to shake in the sliding couplings, in case of contraction or expansion of the rods or building. Gas pipe is quite frequently used, couplings to correspond, being supplied by the Clock Company.

Hands.—The spindles for the hands should be let through the dial far enough to allow the hands to revolve free and clear at all times.

Dials.—To look well and show plainly, dials should be one foot in diameter for every ten feet of elevation. Frequently the space available for dials is limited by reason of the architecture of the tower, so so that this rule cannot be strictly observed, but these proportions should be adhered to as nearly as possible.

Weights.—The *exact* amount of weight needed varies a little in different clocks, and can only be determined by experiment. As it is not usualiy convenient to have so much fall as above, the manufacturer can arrange with one-half, one-third, or one-quarter, by doubling, trebling, or quadrupling the cord on pulleys, and increasing the weights in the same proportion. The weights can be made of strong, wooden boxes, filled with stones or bits of iron, but where room is scanty, they are made best of cast-iron blocks. For the weights wire rope is furnished, which is constructed with a view to safety and durability.

Pendulum.—In case the pendulum bob is below the floor, it should be enclosed in a close case sufficiently large to allow plenty of room for vibration. It should be six to eight inches in the clear, on all sides (pendulum swinging), to allow the air to circulate when removed by action of the bob.

Cord.—The wire rope on the striking train usually requires two coils across the cylinder to run eight days—their being about sixty-two turns in the eight days. The time train requires thirty-two turns only in eight days, and but one coil on the cylinder. (The time trains of Nos. 4, 5, 14 and 15, require but twenty-four turns for eight days.

Pulleys.—It is preferable to place the leading or first pulley as far from the movement as possible—the cord works much better. It can be put on a line with the centre of the cylinder when grooved—the cord will then work both ways. The pulleys should be so secured that the groove for the co d on the outer rim is on a line with the cord so as to prevent any friction or chafing of cord in passing over it.

Hammer.—This should be placed so as to strike the bell through the iron frame-work opposite the wheel for ringing the bell. It should be set on such an angle as to suit the shape of the bell at the sound bow.

The Square Shaft, with two arms to fit it, is to enable you to connect the lifting lever on the clock to the hammer handle, in case you cannot get a direct connection with the wire chain. If the shaft is not long enough, cut in the centre and weld a piece in, to make it as long as necessary.

Oil.—Use clock or watch oil on all the work except the pulleys, and for them it is preferable, unless you have good sperm oil. Be sure that the pulleys are perfectly free before putting them up. Oil every part about the clock where there is friction, excepting gear and pinion teeth.

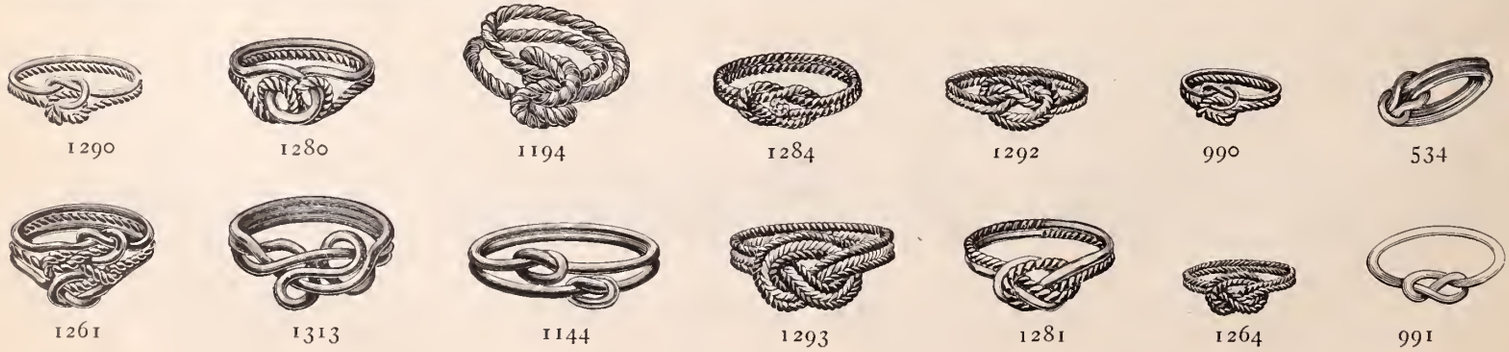
Beat.—The clock is put in beat by a screw in the crutch rod.

Setting to time.—All the Company's clocks larger than Nos. 4 and 14 are made with a new device for setting the hands on the tower, and it also sets the hour and minute hands on small dial on the movement. There is placed on the main time hour wheel shaft a worm wheel with sixty teeth, with a screw to match, fitted to the teeth in small frame-work, and with a small square on each end of the screw, designed to turn the screw that moves the hands on the tower, and on the movement by the same action. One full turn of screw moves the hands one minute. There is a small key furnished with clock to turn the screw for setting the hands—From TOWER CLOCKS. *Issued by Seth Thomas Clock Co.*

JEWELERS' SECURITY ALLIANCE.

THE regular monthly meeting of the Executive Committee was held at the Alliance office, on Friday, August 8th. There were present A. K. Sloan, Vice-President; J. B. Bowden, Chairman; Messrs. Stuart and Kroeber and Geo. H. Hodenpyl, Secretary.

The following applicants were admitted to membership: Wm. A. Thompson, Brooks & Pike, Elias A. Cowan & Co, Boston, Mass.; Charles Mathews, Brockport, N. Y.; Frederick I Hartenstern, Rockville, Conn.; Hains Bros., Little Rock, Ark.; Everett M. Dickinson, North Adams, Mass.



EXAMPLES OF FANCY KNOT RINGS

DESIGNED AND MADE BY

HENRY C. HASKELL, 11 JOHN STREET, NEW YORK.



VOLUME XXI. NEW YORK, OCTOBER, 1890. No. 9

THE JEWELERS' CIRCULAR
AND
HOROLOGICAL REVIEW.

OFFICIAL REPRESENTATIVE OF THE JEWELERS' LEAGUE, THE NEW YORK JEWELERS' BOARD OF TRADE, AND THE JEWELERS' SECURITY ALLIANCE.

It is also the Recognized Exponent of Trade Interests.

A MONTHLY JOURNAL DEVOTED TO THE INTERESTS OF WATCHMAKERS JEWELERS, SILVERSMITHS, ELECTRO-PLATE MANUFACTURERS, AND THOSE ENGAGED IN THE KINDRED BRANCHES OF ART INDUSTRY.

SUBSCRIPTION.—To all parts of the United States and Canada, **$2.00 per Annum,** Postage Paid. To all Foreign Countries, **$3.00 per Annum,** Prepaid.

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Subscribers will do a favor by notifying us at once upon the non-receipt of any number of THE CIRCULAR. The mails will occasionally miscarry, but we will cheerfully make good Uncle Sam's little shortcomings by sending another copy to replace any missing one.



☞ A full Index to Advertisements and a Table of Contents wil be found on Page 5 of this issue.

THERE is a good deal of complaint among the silver-plated ware manufacturers on account of the growing disposition of dealers to defer sending in their orders for the holidays until late in November, or even December. This makes the rush all come at once. During the dull summer months the manufacturers prepare for the fall and holiday business. They determine what kind of goods to make, and how much of each kind. But of course their judgment is not infallible. It frequently happens that some articles are in extraordinary demand, and sell so rapidly that all energies are for the time being bent in this direction—while other articles, of supposed equal merit, by some freak of fashion or fancy, fall to find the demand anticipated by the manufacturerer. Consequently it will be seen how difficult it is in the midst of such embarrassments for manufacturers to give satisfactlon to that large class of delinquents who come in at the eleventh hour, and want their orders shipped at once, "post haste." Under the circumstances this is a manifest impossibility. Besides this unavoidable delay at the factory, there is another possible source of delay. Nearly all plated ware is shipped by freight and dispatch lines, which consumes considerable time, and brings into the problem the uncertainties of traffic—strikes, accidents, blockades, etc.—irritating alike to manufacturer, but wholly unavoidable. In some instances dealers actually lose the sale of holiday goods from this cause. The far-sighted and careful merchant, however, will take all these things into account. He will place his orders with the manufacturer early in the fall, when stocks are unbroken and his needs can receive the fullest attention. His goods will then be on hand in ample season to be displayed to the best advantage for the holidays. It is a positive pleasure for the manufacturer to deal with such customers, as well as a positive gain to the latter, for the cream of the fall trade is sure to be theirs.

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*"Training School for Jewelers."—How the Parisian Apprentices are Taught the Art.—**Continued on page* 65.

*** *** ***

MR. GEORGE F. KUNZ, the mineralogical expert of Tiffany & Co., and special agent for the Government, has just returned from a hasty trip through the gem-bearing States of the Union, including New Mexico, Arizona, Colorado, Montana, Wisconsin, Illinois, Ohio, etc. On his travels he visited the new fresh water pearl fisheries in Southern Wisconsin and Northern Illinois. He found the excitement there at great height though hardly so intense as the newspapers would have us believe Values, however, were much inflated, the price demanded for pearls by the finders being frequently several hundred per cent. higher than could be obtained in New York. As the CIRCULAR predicted last month, the mussels are rapidly becoming exterminated by the ignorant and impetuous searchers. If proper care were exercised Mr. Kunz is of the opinion that the fisheries might be made a permanent and considerable source of income to the rustics that live along the banks of the Pecatonica river and its tributaries. The topography and geological formation of the region is described by Mr. Kunz as very closely resembling those of the Little Miami pearl region and that near Murfreesboro, Tenn.—fresh water streams running over a limestone bed-rock. Fresh water pearls may, therefore, be looked for in all

such places with every prospect of success. Many localities are doubtless yet to be discovered. Jewelers throughout the country might well study up on these fresh water mussels or *unios* and do a little prospecting on their own account if the geological conditions are favorable. However, we would not advise any jeweler to attempt to make a business of pearl-hunting. Mr. Kunz says very few of the Wisconsin enthusiasts do that, and like the gold-hunters of '49, they are continually looking up new "diggins."

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Production of Precious Stones in the United States during 1888, *by* GEORGE F. KUNZ.—*See page* 61.

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THE need of a school for watchmakers in or near New York City has frequently been emphasized by the CIRCULAR. It seems singular that while so much interest has been manifested in this branch of educational work in other parts of the country, New York has been without the advantages such an institution affords. This is all the more remarkable, considering the success that has attended these ventures elsewhere, and the superior facilities to be secured by a metropolitan location. If report has it correct however, we shall not want long for a watchmakers' school. A Sixth avenue watchmaker, who has long been interested in horological schools, and whose three daughters learned the trade under him, has decided to establish a school of horology, especially for young women. He argues rightly that women, by their deftness and faculty for manipulation, are well adapted by nature to succeed in such a vocation. The women employed in the watch factories of the country learn but one operation as a rule, and have no chance to get out of this groove and master the general principles of watch construction. Many young women inherit mechanical talent from their fathers, and readily acquire facility in the handling of tools and the operation of machinery. Such women, he thinks, if given a chance, should become fairly good watchmakers in three years' time. Only such girls as show an aptitude and willingness to work will be encouraged to take the course of instruction. With this line of argument, and the plan of educational work mapped out by the originator of the proposed watchmaking school for women, everybody should be in hearty sympathy—except watchmakers. To them it means a new and rather formidable source of competition.

*** *** ***

Consult ELSIE BEE *if you want to know what to buy for the holiday trade.*

*** *** ***

THE CIRCULAR is pleased to note that a prominent jewelry house of Detroit, Messrs. Roehm & Son, has set a good example to the tradesmen of that city by purchasing a year's scholarship in Mr. Dunsmore's Detroit School of Arts, an institution organized on the new plan for training young artisans in the principles of applied design. Thanks to the CIRCULAR'S continued agitation the jewelry trade is taking a leading position in this movement. In the near future, when the importance of technical education is more fully appreciated, those who stood by in the hour of need will find abundant reason for self-congratulation.

*** *** ***

If you are an optician or wish to become one, DR. BUCKLIN'S *series on "Mechanical Ocular Defects," is just what you want.*

*** *** ***

JEWELERS who are harassed by thieves might learn a lesson from a brother craftsman, of Denver, Col. For some time past he had been troubled with attempts at burglarizing his establishment. At length becoming desperate, he rigged a trap-gun at the back door, so arranged that anyone seeking entrance would be promptly filled with buckshot. Shortly afterward, while the wily jeweler was reposing peacefully at his home, burglars attempted to effect an entrance, and one of them, as evidenced by blood stains about the door, received the contents of the gun. It was a heroic measure, and it will probably rid the jeweler of his unwelcome back door visitors.

*** *** ***

Call the attention of your local editors to ELSIE BEE'S *Fashion Notes and have them reprinted. It will stimulate trade.*

*** *** ***

NOW that the annual holiday rush is approaching, it behooves the retail jeweler to set about making his store attractive for the increased trade. First of all, he should realize how much depends now-a days upon the arrangement of goods in the show window. He should see that some novel display is made, and that it is frequently changed. Mechanical toys, oddities of various kinds can be occasionally introduced with good effect, although this should not be done to the exclusion of the jeweler's legitimate line. With a little time and thought, striking combinations can be devised. If ingenuity and care are expended, the result will be felt not only in the increase of trade from the casual sight-seer whose attention is arrested by the display, but the subject will very likely become town talk. Ladies will comment on it over their tea, the reporters will notice it in the local columns, and all around the jeweler will get a great deal of gratuitous advertising. And this leads up to another point. The retail jeweler who does not keep on the right side of the local newspaper men makes a great mistake. They can be very useful to him.

*** *** ***

Don't fail to see "The Other Side of Life."

*** *** ***

THE discovery of opal deposits is reported four miles northwest of Mocow in Idaho Territory. The stones were found among the debris thrown out of a well. Specimens taken to a local jeweler were pronounced genuine fire opal after being subjected to tests with acid and the blow-pipe. Two companies have already been formed and immediate steps will be taken to develop the claims. So the story runs on in true border style. The stones are said to be in the pocket of an old lava formation, but as, up to the present time, no reliable expert has passed judgment upon the new find, it will be prudent in the light of the many spurious bonanzas westerners are in the habit of stumbling upon, to withhold further comment until the stones undergo more careful examination.

*** *** ***

Are you going to make a proper window display for the holidays?

*** *** ***

AT LAST alluminium is entering the field in competition with nickel and silver. A concern in Lockport, N. Y., said to be the largest manufacturers of aluminium in the country, has reduced the price of this metal in the alloys in which it is used to $1 per ounce. It will be seen how great is the progress science has already made in cheapening this much desired metal. At this rate of reduction it will doubtless soon be used in large quantities by many branches of the jewelry trade.



SOUTH AFRICAN GOLD AND DIAMONDS.

[From Our Special Correspondent.]

Pretoria, Aug. 16, 1890.

The monthly output of gold from the Transvaal Fields does not greatly increase and predictions are not being realized as to the marvellous richness of the reefs. The official returns show that the total yield for July from all the mines was only a trifle over 39,000 ounces. Having regard to the enormous amounts invested in the different companies and concerns by a too confiding British and Continental public this output is unsatisfactory. Little short of one hundred million pounds has been subscribed by shareholders, few of whom will ever get any return for their investments. It is to be feared that there has been sad rascality in the flotation of the majority of South African gold companies.

Some little attention is being directed to silver mining in this part of the country. Several companies with good capital are at work and the prospects are said to be satisfactory.

Diamonds are being found in small quantities on farms in the Free State and in the Transvaal. The stones found were near the surface, and, though small, are of good quality. The opinion widely prevails that many other parts of South Africa than Guiqualand West are rich in diamondiferous deposits if the localities could only be determined.

The report of the Government Inspector of Diamond Mines just presented to the Cape Parliament furnishes much interesting information. In addition to an exhaustive report, dealing generally with the operations in the Kimberley, De Beers, Dutoitspan and Bultfontein mines during the past year, the Inspector gives a brief history of the diamond industry for the past decade. Captain Erskine is the name of the Inspector, and he was appointed to the supervision of diamond mines in 1881, at which time the system of mining in general vogue was "open working." Even then some claim holders did not seem at all confident about the permanence of the industry. Many had the idea that the diamondiferous ground had been deposited in some inexplicable manner in various holes or cups in the earth's surface. The probability of the diamondiferous earth being true mine rock contained within the pipe of the producing volcano was then opposed and even ridiculed by some of the diggers of the period. The depth attained in the deepest workings is about the middle of the Kimberley mine, some 400 feet from the red soil surface in 1881, and the discovery of the containing rock on the north side at about 260 feet from the surface, however, served to convince reasonable men that diamond mines were of volcanic origin, and that they were permanent as compared with diamondiferous alluviums. After referring to the characteristics of the "yellow" and "blue" ground, the Inspector states that the system of washing up obtained in 1881, is essentially the same to-day, but in sundry details, and notably in the size of machines and excellence of the machinery, very great improvements have been introduced. The earlier washing gears being practically experimental did not perfectly or at least satisfactorily fulfill their duties, and in many instances it was found that a considerable loss was sustained in diamonds thrown out in the "tailings" through the imperfect performance of the early washing pans. The result of this is seen in the fact that to-day large quanti ties of "old-day" dry sortings and of the "tailings" from ill-designed machines are re-washed and found to pay for the re-treatment. A great deal more information as to the machinery used in the mines in former years, the falls of main reef from time to time, system of hauling shafts, draining floating reef, the introduction of the electric light for mining operations, the searching system, mechanical haulage, compounding of native laborers is given in the Inspector's historical sketch, and this is followed by details of operations in the mines in 1889. Dealing first with the Kimberley mine, the report states that mining is carried on entirely on the underground method. "This mine," remarks Captain Erskine, "could yet be worked as an open mine, and I still venture the opinion that it might be advisable to remove the fallen reef and resume exploitation of the "blue" upon the open system, drawing the ground through the tunnels below and outside hauling shafts." The amount of diamonds won during the year was 816,135 karats, of a declared value of £1,132,490. With regard to De Beers, the report states that the only modification in the working of this mine is the enormous development of the underground systems. There are two main levels, one at 700 feet connecting direct with No. 2 incline shaft on the west, and the other at 800 feet connecting direct with the new vertical rock shaft sunk about 550 feet to the north of the mine. The system of working is entirely underground, and in this mine open working on the old system is out of the question Reference is also made to the Dutoitspan, Bultfontein, St. Augustine and Otto's Kopje mines and returns of the labor employed, wages paid and accidents on all the mines on the fields are given. Referring to the trade of Kimberley the report says that since the completion of the colonial railway system to the fields great numbers of visitors to this mining centre and of travellers to and from the interior have come to and passed through Kimberley. The yield and declared value of diamonds for the years 1888 and 1889 from ground washed and other sources by each mine were :

	1888.	1889.	Tota's from 1881 to 1889 inclusive.
Kimberley Mine, karats	1,332,809	816,153	7,767,925⅝
Declared Value £	1,270,373	1,132,490	8,668,389
De Beers Mine, karats	1,003,406½	947,195	5,691,616½
Declared Value £	935,444	1,312,872	6,298,654
Dutoitspan Mine, karats	569,013½	450,336¼	4,102,297⅞
Declared Value £	758,463	897,586	5,967,927
Bultfontein Mine, karats	659,887½	541,300¾	4,313 281¾
Declared value £	642,763	746,817	4,511,896
Total karats	3,565,116½	2,754,967	21,874,821¾
Value	3,607,544	4,089,765	25,436,868

There was no returns from the Dutoitspan and Bultfontein in 1881.

The average price per karat realized upon diamonds produced by each mine from 1882 to 1889 inclusive is given as follows: Kimberley mine, 27s. 10¼d.; De Beers, 21s. 1½d.; Dutoitspan, 28s. 4½d.; Bultfontein, 21s. 7d. The average of the four mines for the eight years was 22s. 11½d. per karat. The annual average of the four mines was: 1882, 26s. 5¾d.; 1883, 21s. 2d.; 1884, 23s. 6d.; 1885, 19s. 6d.; 1886, 21s. 8d.; 1887, 22s, 5¾d.; 1888, 20s. 10d.; 1889, 28s. 2d. It will thus be seen that the highest average was obtained during last year. The average price per karat realized in 1889 was as follows: Kimberley mine, 26s. 9¼d.; De Beers, 27s. 6d.; Dutoitspan, 20s. 10¼d.; Bultfontein, 27s. 7d. Kimberley and De Beers mines both secured their highest average in 1889 and their lowest in 1885, when the former obtained an average for the year of 17s. 6¼d. per karat and De Beers 17s. 8d. per karat. The number of cases of traffic in illicit diamond buying tried in 1889 was 100, as compared with 162 in 1888. The total weight of diamonds lawfully realized since the opening of the diamond mining industry in 1869 is computed at ten tons. To this amount should be added 25 per centum as a moderate estimate of the illicitly procured stones, to give the approximate quantity of 12½ tons as the total yield from these mines for the period 1869 to 1889 inclusive. The report is altogether an important and interesting one.



[From Our Special Correspondent.]

Chicago, September 22, 1890.

There is but one verdict among the different branches of the trade, and that is that business is exceptionally good, and the volume of business must be necessarily very much in advance of last year, and probably for several years. Several of our largest houses have been compelled to increase their force and as well to work nights. The claim is made that western buyers never bought as liberally as they are doing this year. The Silver Bill has caused a great many jobbers and retailers who are blessed with capital to buy heavily of flat and hollow ware, as they have been warned of an advance in price by the manufacturers In fact, the prospects for an excellent fall trade were never so flattering as at present.

In mentioning some of the foremost of our jewelers we cannot pass the well-known and popular house of Giles, Bro. & Co. This firm have increased their force of diamond cutters and polishers and are constantly turning out from the natural state some of the handsomest of gems offered in the city. This house is having an extraordinarily large trade this fall. The orders for the anti-magnetic shield, so extensively advertised, are numerous, the demand far exceeding the supply.

B. F. Norris, Alister & Co. are as usual busy. The large force necessary in such a house makes plenty of business a necessity. They must have it Your correspondent found no one napping, every person hustling to get out orders. This company have just placed a very fine Howard tower clock in their establishment. The machinery is placed in the office, and the conducting rods run outside into an enormous watch dummy in which the gong is placed. The deep-toned gong pealing out the hours and half hours attracts the attention of the great number of people passing to and fro on State street. A new catalogue of some four hundred and fifty pages has just been issued and will be mailed free to retailers desiring it.

Mr. Todd, the genial manager of the Chicago branch of the Towle Mfg. Co., always has a kindly greeting for your correspondent. F. S. Dane and O. R. Ryan, "knights of the grip" for this company, are in their respective territories, and the numerous orders coming in prove that they are not novices in the business.

Otto Young & Co. will shortly issue a handsome illnstrated catalogue descriptive of the extensive line of goods handled by this large house.

We can hardly get goods to supply our customers, says the agent of A. H. Smith & Co., diamond importers.

Every department of the large house of C. H. Knights & Co. is replete with the best makes of goods possible to get. This house makes a specialty of material and it must certainly be appreciated by their customers.

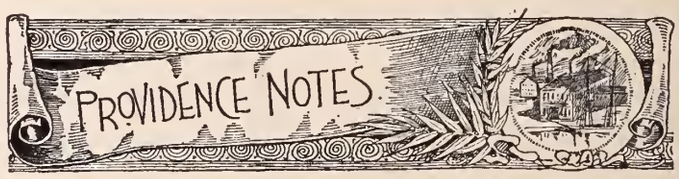
The Chicago Watch Tool Company have been compelled to put in more machinery and add additional help, the demand for the excellent tools of this concern has become so great. Their new countershaft is meeting with great success. They have already about 100 applications by letter for their new catalogue, which will be out next week. They are selling a great many of their splendid watch signs.

"Hello, Circular! I am very busy. Just say we are all right, business good, etc.," said Mr. Corey, of the Pairpoint Company, the other day. This company are to be congratulated on their splendid exhibit at the Minneapolis Exposition. It was by far the finest there.

Giles, Bro. & Co. have about completed their new catalogue. It will be sent out about the 1st of October.

The Jewelers' School of Letter and Monogram Engraving still continues to prosper. New students are daily being received, and those leaving speak in the highest terms of the management and faculty.

The Wendell Manufacturing Co. will shortly issue a handsome catalogue of their new goods now being placed on the market. Most of the designs are entirely new. The Circular's Observer.



Providence, Sept 24th, 1890.

There are being placed in Grace Church two handsome memorial slabs, designed and executed by the Gorham Manufacturing Company. One is a polished brass plate, about 30x15 inches, bearing the inscription in red and black wax. The other is of granite marble, 4x3, on which is a polished brass plate, with inscription in wax.

Carl J. Horchet has started in the retail business on Mathewson street. He was formerly with D. C. & H. S. Fink, who did business on Westminister street up to within a year or so ago.

The annual ladies' field day of the New England Manufacturing Jewelers' Association occurred Saturday September 7, in the charming little village of Wrentham, Mass. The place is located about six miles from North Attleboro. In its centre is a beautiful lake—Lake Pearl—making it quite a suggestive place for the jewelers' gathering. About 125 members of the Association, including their families, were present. They represented the leading manufacturers of Providence, Attleboro, North Attleboro, and smaller towns. The Providence people left on the eight o'clock Old Colony train, and were joined by the Attleboro manufacturers one-half hour later at that brisk manufacturing town. At North Attleboro the party, under the superintendence of Vice president W. W. Fisher, boarded several party wagons, which conveyed all to the scene of the day's good time.

On arriving at the destination a tour of the place was made, which resulted in general satisfaction. An hour was thus spent. Then to the dance hall, always a favorite attraction to a gathering of happy jewelers, the party went. A Providence orchestra furnished music. To those who were not inclined to waste their superfluous energies in the waltz and lanciers, cards, football and base-ball afforded enjoyment. One o'clock brought dinner, and an elaborate dinner it was. Soon after the mid-day meal was over a rain-storm set in, so the sports arranged for had to be postponed. Of course the dance-hall was the most natural place in the world for the party to take refuge, so hither it went. Some sang, some danced—all made merry Mrs. R. J. Owens, of Brooklyn, N. Y., an accomplished contralto, and the guest of Mr. Frank T. Pearce, sang a brilliant solo. The storm didn't ease up so the party had to march through it, dodge the raindrops as best they could, and make for the depot.

The sons of the members of the Association, who had entered for the bicycle races, had brought their machines with them. They drew lots for the prizes, an easy way of winning them. Howard McCloy drew the first prize in the bicycle race, and Allen Buffinton the second; A. G. Pearce carried away the first prize in the foot race. The party arrived at Providence at about six o'clock.

Mr. Morton, Secretary of the Jeweler's Board of Trade, says that Mr. Eisenbach did not settle in full, as reported in last month's Circular, but that the gentleman is entitled to commendation, in that, after claims had been barred by statute, he had compromised them upon a basis of 10 per cent., and thus settled outstanding accounts against the former firm.

PARIS GOSSIP.

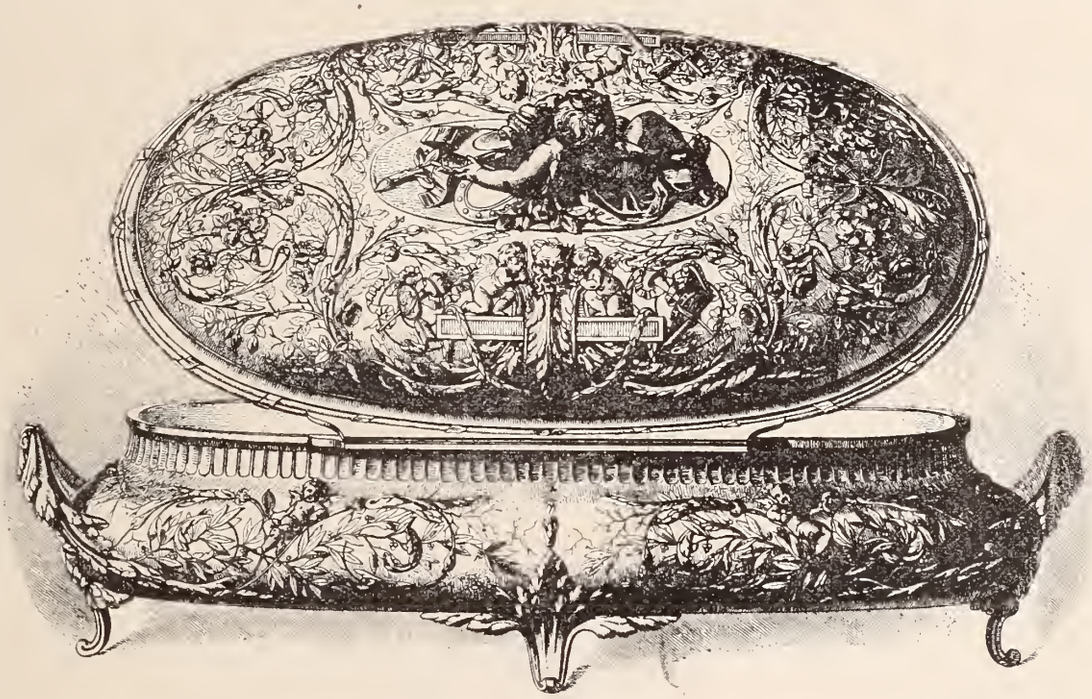
[From Our Special Correspondent.]

THE CLOSE OF THE SUMMER SEASON—COMPETITION AMONG JEWEL CASE MAKERS—EFFECTS OF RISE IN SILVER—THE FORTHCOMING LA PLANTE EXHIBITION—A LOUIS XVI. JEWEL CASKET.

Paris, France, September 10, 1890.

In spite of the miserable weather we have had during the month of August and at the beginning of September, sea-side towns and summer places of resort have been crowded to excess. Our fashionable society, as well as bourgeois, who deserted Paris very late in the season, seem bent upon staying away, at any cost, until the middle of October. Yet business in the French capital has not been quite so bad lately as might have been expected. Foreigners and provincial visitors bought rather freely in the cheap lines, and imitation jewelry tastefully varied sold very plentifully.

Evidently, the only chance which our retailers have of doing a constant business is by renewing their display in the cheap fancy lines as often as they can. Silver gilt articles, exhibiting pretty colored stones gracefully mounted attract purchasers, especially if he price seems very small to the effect obtained.



LOUIS XVI. JEWEL CASKET.

The most taking jewels in the cheap line consist of green or black grapes, made of unpolished stones. They look quite appetizing. The stalk is of brown gilt silver-sprinkled with diamond dust. They are indeed original brooches. Ear-rings to match consist of one grape, and are often sold with a brooch. The set is arranged in a square case, the inside of which is lined with pale-gray velvet, while the outside is of deal wood, with the words *Chasselas de Fontainebleau* in plain letters across the cover.

NOVELTIES IN JEWEL CASES.

Spurred by competition, our jewel case makers are repeatedly compelled to bring out startling novelties. Those who have a well-established name may be contented with devising elegant shapes, but a new-comer must draw the attention by patterns strikingly original Among these an artificial rose (with a bud or two) whose top part opens through an invisible joint, disclosing the inside of a jewel case, may be considered a hit. The same can be said of a bunch of violets. This design might be extended to a great many other flowers, and I see no reason why fancy jewel cases should not be made also in the shape of some birds or other animals. A man of taste can easily devise elegant outlines and pretty curves, which, being arranged in many different ways, will allow him to obtain a great variety of shapes. Besides, the case ought to be thoroughly in keeping with the style of jewel it is made to contain. Evidently a set of jewels of a serious character, exhibiting large stones with a gold mounting soberly chased, would be out of place in a dainty case, lined with a material of a tender hue. Of course an artist case maker is able to give good advice on those matters, but sometimes the jeweler will have his own way, and, although he may possess a good taste in his own line, he does not always show it in another. This should not surprise us, since it can be said just as well of painters; have we not seen very often at the annual exhibition remarkable paintings gaudily framed?

THE RISE IN SILVER.

The rise of silver at first seriously upset our silversmiths and their customers. Some among the former stopped at once making stock, for fear that an impending fall might cause them to undergo a heavy loss. The others kept all their hands sufficiently employed, especially in the light lines, such as knife-handles, tea-spoons, etc., only making massive wares to order. As to retailers, they vowed that they would not buy anything until silver would condescend to come down again. All this excitement has partly subsided, and we may hope very soon to see matters resume their usual course It is evident that manufacturers must not hesitate in making stock, if they are at all anxious to do any business during the Christmas season. It is not in showing reluctant retailers last years novelties, and nothing else, that they can expect to induce them to buy. Besides, New-Year's-Day presents generally consist of fancy articles in which the cost of workmanship often exceeds that of the metal. Hence, there is very little risk to run by making plenty of these goods in advance. I am glad to see that several Parisian silversmiths rightly understood the position. A few days ago they sent their traveling agents to our provinces with a large assortment of fresh and taking goods, and customers are told that for orders in the fancy lines delivered from this month to the end of the year the price of the metal will be calculated according to the lowest quotations attained before the end of the year. Of course this will not hold for the heavy wares.

LA PLANTE EXHIBITION.

A very original and interesting exhibition is to to take place in 1892, at the Palais de l'Industrie, under the name *La Plante* (Plants). If the organizers (the Union Centrales des Arts Décoratifs) are allowed to carry out their plan, we shall witness a universal exposition of art circumscribed within a special field. It will be divided into five sections In the first will be assembled not only real flowers of all kinds, from the common ones to the most rare, but also real plants and herbs of every description. The second section, devoted to industrial art, will contain articles made of various substances, reproducing either in their shape or in their decoration all kinds of flowers and plants. In the third department we shall see

paintings, drawings and models, in which flowers and plants will be exhibited in the most decorative manner. The fourth one will show us the progress in that line by the pupils of various schools of drawing; several competitions will take place, and lectures will be delivered during that time, which will give to this part of the exhibtion a thoroughly practical character. If the last section is as complete as we should like it to be, it is bound to prove highly interesting. Collections of ancient and modern works of all styles will be gathered there in a methodical and chronological order, showing us the important part ascribed to plants, at all times, in decorative art. A room will contain Japanese works of all description in metal, wood, leather, paper, ivory, stone, glass, tissue, etc., and we shall learn from these graduated displays how the artists and artisans of that country have at different periods applied to decoration their autochtonous flora. In another room we shall see Persian works, etc

A LOUIS XVI. JEWEL CASKET.

The illustration reproduces a jewel casket in massive silver, in the Louis XVI. style. The shape of it is elegant, and, although the ornaments on the cover are very elaborate, they preserve a symmetrical appearance which prevents them from looking confused. The chasing, treated in various reliefs, is most delicately finished.

JASEUR.



[FROM OUR SPECIAL CORRESPONDENT.]

THEY HAVE USE FOR POLITICIANS THERE—RECENT INNOVATIONS IN DRESS—WEDDING RINGS FOR GENTLEMEN—CAN DIAMONDS BE SUCCESSFULLY IMITATED?—NOVELTIES IN SILVER SMALL WARES—FAMILY HEIRLOOMS TO THE FORE.

LONDON, ENG., Sept. 12, 1890.

At this season of the year, when the largest and best of our retail shops are brightening up their windows, and all inside are as busy as they can be in arranging their most attractive goods for the fast approaching autumn season, manufacturers are wisely paying some attention to the production of novelties to make the retailers' displays somewhat smarter than they would be with the current goods only. I do not know how it is in your country, but here politics somehow affect our trade without any design on anybody's part with that object. This season, for instance, we are to have an autumn session of Parliament, I believe, and that naturally and of necessity brings certain classes of "society" into London at a time when London would be otherwise comparatively empty—at any rate from society's point of view. Our London tradesmen all like an autumn session. It comes as a relief to the quietude which so generally prevails between the 12th of August and the commencement of the next year. This circumstance, in conjunction with the fact that in August we have the last of our public holidays until Christmas, gives the retailer a chance of some steady business, and we have consequently a reasonable prospect of an increased demand. A good ready money trade is greatly needed just now, not only in London but throughout the provinces. Our trade has unhappily witnessed several failures lately, especially in the retail. There have been several failures amongst factories, but I am more particularly thinking of the shop-keepers, many of whom it is well known have had difficulty in keeping their affairs straight. An increased London trade may be expected, with Parliament sitting; and, as members who usually make a long stay abroad during winter will this year, most likely, spend more time at their country residences, and provincial traders will derive benefit also. It is not that the members of our houses of Parliament spend so much extra money themselves, but they encourage a class of festivities and entertainments that induce other people to spend more.

There is another direction in which some phases of the jewelry trade are likely to be beneficially affected. The best style of decorations for dinner-dresses and tea-gowns are assisted greatly by the embroidery of lace with jewels. The same style is adapted for ball dresses and for general full-dress purposes—the character of the decorations varying with the circumstances of its use.

I have seen a great novelty in the shape of a butterfly of red lace, with a sort of cream-white ospray, on which two or three diamonds scintillated with great effect. A new form of head decoration is a fire fly, with mother-of-pearl wings and small gems glittering on the body and head. Of course the demand for these can never be very great. But this class of trade should be encouraged; it fosters the art of the jeweler, and provides scope for a display of ingenuity and skill that it is well to find opportunity for.

While I am out of the beaten track of ordinary trade, I may mention another departure that will do some good. The fashion of the men to wear wedding rings is certainly increasing, and as ladies are very likely to support it there is some prospect of it still further increasing. It is reported that a young lady of advanced views, when spoken to about wearing a wedding ring, looked at her affianced and remarked, "I will wear one with pleasure—if he does." Certain it is I have seen some recently married men wearing the emblem of union. This fashion will be good for trade.

There has been much talk lately about the perfection with which emeralds and diamonds can be imitated. The fear has been lest imitation gems should be put on the market which none but skilled experts could distinguish from genuine ones. This fear has taken possession of some people to such an extent that they have been afraid to buy, even from first-rate houses. However, the announcement has been made in the daily papers, and by an authority that is recognized in London at least, that there is no reason for this uneasiness. The only precaution the public need take is one that should always be exercised in transactions with our trade, and one that I have always urged, namely—deal only with persons of known responsibility.

A feature of the present time is the introduction more extensively of good designs in silver small goods. I do not mean cheap imitations of better class work that has become popular, but good designs prepared specially for silver goods. Silver brooches and ear-drops are now offered in original designs, and quite a large number of small silver table articles are shown.

The watch-bracelet is coming again into vogue. In fact, our fair friends are wearing—or, rather, placing—their watches in all sorts of queer places just now. In portmonaies, in sunshades, in satchels, and in muffs.

There have been some expensive wedding-presents of jewelry lately, but unfortunately our manufacturers have not benefitted very greatly thereby. Jewels and head ornaments to the value of tens of thousands of pounds have been given by bridegrooms to their brides, but in several instances they have consisted of old family jewelry renewed and renovated and remounted.

I was an invited guest at a corporate dinner in one of our northern provincial towns last Friday, and I was struck by the inartistic though evidently very valuable symbols of office worn by the mayor (chief magistrate) of the borough. The chain itself was a pattern devoid of any taste, while the star pendant on his breast reminded me more of an ordinary soldier's war medal, one that had been struck off by the hundred, rather than as an appropriate decoration for the very worthy first citizen who wore it. These badges of office are passed on from one holder of the position to his successor. They are, therefore, not frequently replaced. All the more reason why productions of some artistic merit should be procured when they are replaced.

If we do not find true art in purchases made with public money, how can we expect to find it predominate in the purchases of private persons?

VIGILANT.



A Complete History of Watch and Clock Making in America.*

[By Chas. S. Crossman.]

Number Forty-seven.

Continued from page 54, September, 1890.

DAVID RITTENHOUSE, L.L. D., F. R. S.,

THE famous astronomer, philosopher, and clockmaker was born April 8, 1732. The house in which he was born is still standing, near the junction of Paper Mill Creek, with the Wissahicken, a short distance from Philadelphia. The Rittenhouse family for several generations had carried on the manufacture of paper at this place. While David was yet an infant, his father, Mathias Rittenhouse, moved to the township of Norriton, Pa., and then commenced farming. It was his intention that David should be a farmer, and at the age of fourteen the lad was following the plow. His brother Benjamin relates that when he went to call him to meals, he repeatedly observed that not only the fences at the head of the furrows, but the plow handles were covered with chalked numerical figures.

There were no schools in the vicinity that taught more than reading, writing and the simplest rules of arithmetic, and it was not until the age of nineteen that David was enabled to study those higher branches with which his mind was so ably fitted by nature to cope. At that time his sister married Mr. Thomas Barton, afterward Rev. Thos. Barton, who became an instructor in what is now the University of Pennsylvania. Between Mr. Barton and David there sprung up the warmest friendship, which lasted until death, and Mr. Barton aided David in his studies, and furnished him with books and advice to educate himself.

To resume the history of David's life. At the age of seventeen he made a wooden clock of very ingenious workmanship, and soon afterward constructed another of better workmanship. He had already made a comple water mill in miniature, when a boy of eight years.

David's father, who had but scant ideas of mechanics, was for some time opposed to his son's renouncing agriculture and engaging in philosophical pursuits. At length, however, he yielded, and gave him money to purchase in Philadelphia such tools as were necessary for commencing the clock making business, which the son then adopted as his business. At this time young Rittenhouse erected on the side of the public road, on his father's land in the township of Norriton, a small but commodious workshop, and after making many tools himself to supply the deficiency in his purchased outfit, he set out in good earnest as a clock and mathematical instrument maker. From the age of nineteen to twenty-five, he applied himself unremittingly to his trade and studies, working at his trade through the day, and studying at night, even depriving himself of necessary rest, and permanently impairing his health. For several years afterward our young philosopher lived a retired, but by no means an inactive life in his father's family. His chief occupation, of course, was clock making, but his health permitted him to continue his philosophical pursuits and studies to a certain extent. Frugal in his expenditures, his industry furnished him with ample means for comfort; and good health seemed to be the only thing lacking to complete his happiness.

In 1763 he was employed by the Penn family in making geographical surveys preparatory to finally establishing the boundaries between Pennsylvania and Maryland.

About the year 1764, his father purchased a farm in Worcester township adjoining, and gave the old farm in Norriton to David. In 1766 David married Miss Eleanor Colston, daughter of a reputable Quaker farmer in the neighborhood. They lived on the farm at Norriton for four years, during which time the clock business was carried on with the assistance of some apprentices and journeymen. It was during this time, viz., from 1766 to 1770, that the two important circumstances occurred which gave great celebrity to the reputation of Mr. Rittenhouse as an astronomer. These were, the admirable result of his observations of the Transit of Venus, as published in the Philosophical Society's Transactions, and the construction of his famous Orrery, or planitarium. Mr. Rittenhouse also furnished the Norriton observatory with three instruments made by himself, for observing the Transit of Venus, viz., an equal altitude instrument, a transit telescope, and an excellent time piece, having for its pendulum rod a flat steel bar with a bob weighing about twelve pounds, and vibrating in a small arch. It beat dead seconds, and was kept in motion by a weight of five pounds

Mr. Rittenhouse's wonderful ingenuity of invention was manifested specially, however, in the construction of his Orrery (so called in honor of Richard Boyle, Earl of Orrery), and thus leaves him without a rival in the twofold character of astronomer and mechanic. Mr. Rittenhouse was incontrovertibly the inventor as well as maker of that wonderful machine which bears the name of the Rittenhouse-Orrery. Dr. Morse in noticing some of the more prominent American mechanical inventions, said: "Every combination of machine may be expected from a country, a native son of which (referring to Rittenhouse) reaching this inestimable object in its highest point, has epitomized the motions of the spheres that roll throughout the universe." (See his description of the instrument following this article.) The first orrery was completed in the summer of 1770, and was sold to Princeton College, much to the chagrin of the officials of the College of the City of Philadelphia, who wished to purchase it for their institution. A second orrery was made for this college, and completed in 1771.

Mr. Rittenhouse's researches in astronomy prompted him to desire the greatest possible accuracy in the construction of time pieces adapted to astronomical purposes, and uniting as he did, operative skill with a thorough knowledge of the principles upon which their construction depends, he was enabled to display to the world the near approach to perfection to which the pendulum chronometer may be brought. These chronometers were either made by his own hands, or under his immediate inspection by his brother Benjamin, who was also an excellent mechanic. One of these fine instruments bearing the name of Benjamin Rittenhouse as maker, and date of 1786, came into the possession of Mr. Norton Prior, of Philadelphia. An admirable one constructed by David Rittenhouse himself, and which formed a part of the apparatus of the Philadelphia Observatory, is now located in the halls of the American Philosophical Society. It was constructed on an improved plan of his own, and is marked by that exquisite finish and workmanship that characterized everything which passed through his hands.

In 1767 he constructed an ingeniously contrived thermometer, on the principle of the expansion and contraction of metal by heat and cold. The first academic honor conferred on David Rittenhouse was on the seventeenth of November, 1767, when the College of the City of Philadelphia, bestowed on him an honorary degree of Master of Arts.

In 1769 he was employed in settling the limits between the provinces of New York and New Jersey.

In the autumn of 1770 he moved with his family to Philadelphia, taking up his residence at the corner of Arch and Seventh streets. Shortly afterward his wife died. In January, 1771, he was elected one of the Secretaries of the American Philosophical Society. From 1771 to 1776 politics engaged the public mind to the exclusion of science. In December of the year 1772, Mr. Rittenhouse married Miss Hannah Jacobs, of the City of Philadelphia. In the

next ten years he was honored by many public offices, among which was a term in the General Assembly of Pennsylvania, of which he remained a member until the end of its legislative functions.

He removed in 1788 to a house erected by himself on his observatory lot at the corner of Arch and Seventh streets, diagonally across the street from his former residence. On the death of Benjamin Franklin who was President of the American Philosophical Society, Mr. Rittenhouse was elected to succeed him, January 1, 1790.

He was appointed Director of the Mint by President Washington, in April, 1792, being the first to hold this position under the Federal Government. He resigned the position June 30, 1795, as he did not feel able to attend to the duties, through failing health. He died June 26, 1796, at the age of sixty-four years, and was interred in a mausoleum adjoining the garden of his dwelling at the northwest corner of Seventh and Arch streets. Later his remains were removed to the burial ground of the Third Presbyterian Church.

The following description of the Rittenhouse Orrery was written by the inventor himself:

"This machine is intended to have three faces standing perpendicular to the horizon; that in the front to be four feet square, made of sheet brass, curiously polished, silvered, and painted in proper places, and otherwise ornamented. From the center arises an axis to support a gilded brass ball, intended to represent the sun. Round this ball move others, made of brass or iron, to represent the planets. They are to move in elliptical orbits, having the central ball in focus; and their motions to be sometimes swifter and somtimes slower, as nearly according to the true law of an equable description of areas as possible, without too great a complication of wheel work. The orbit of each planet is likewise to be proper'y inclined to those of the others, and their aphelia and nodes justly placed, and their velocity so accurately adjusted as not to differ sensibly from the tables of astronomy in some thousands of years.

"For the greater beauty of the instrument, the balls representing planets are to be of a considerable lightness, but so constructed that they may be taken off at pleasure and others much smaller and fitted for some other purposes put in their places.

"When the machine is put in motion by the turning of a winch, there are three indexes which point out the hour of the day, the day of the month, and the year (according to the Julian account), answering to the situation of the heavenly bodies which is then represented—and so continually for a period of five thousand years, either forward or backward.

"In order to know the true situation of a planet at any particular time the small set of balls are to be put each on its respective axis, then the winch is to be turned round until each index points to the given time. Then a small telescope made for the purpose is to be applied to the central ball, and directing it to the planet its longitude and inclination will be seen on a large brass circle, silvered and properly graduated, representing the zodiac, and having a motion of one degree in seventy-two years, agreeable to the procession of equinoxes. So, likewise, by applying the telescope to the ball representing the earth, and directing it to any planet, then will both the longitude and latitude of that planet be pointed out (by an index and graduated circle) as seen from earth.

"The two lesser faces are four feet in height, and two feet three inches in breadth. One of them will exhibit all the appearance of Jupiter and his satelites —their eclipses, transits, and inclinations; likewise all the appearances of Saturn, with his rings and satellites. And the other will represent all the phenomena of the moon, particularly the exact time, quantity, and duration of her eclipses, and those of the sun occasioned by her interposition; with a most curious contrivance for exhibiting the appearance of a solar eclipse at any particular place on earth; likewise the true place of the moon in the signs, with her latitude, and the place of her apogee in the nodes; the sun's declination, equation of time, etc. It must be underssood that all these motions are to correspond exactly with the celestial motions, and not to differ several degrees in truth in a few revolutions, as is common with orreries.

"If it is thought proper the whole is to be adapted to and kept in motion by a strong pendulum clock—nevertheless at liberty to be turned by the winch and adjusted at any time, past or future.

"N. B.—The diurnal motions of such planets as have been discovered to revolve on their own axis are likewise to be properly represented, both with regard to the times and situation of their poles."

(*To be Continued.*)

NO BOND REQUIRED.

TRANSATLANTIC TRAVELER—Let me introduce my friend, Stubbs. He's a diamond in the rough.

CUSTOMS OFFICER (with his mind on business)—Diamonds in the rough? Duty free.—*Chicago Tribune.*

Thank You, Gentlemen.

Mifflintown, Pa, July 31, 1890.

As THE CIRCULAR now is, I regard it as one of the best techinal publications published in the interest of any craft or profession in the world. J. W. WAGNER.

Seneca Falls, N. Y. July 16, 1890.

I read THE CIRCULAR with great interest and have come to look upon it as an instructor; without it I could not keep pace with the improved method of doing repairs and jobbing.

L. H. CAREY.

Moorefield, W. Va, July 19, 1890.

THE CIRCULAR is a valuable book for any one interested in watch work. J. BEATTY & SON.

Boston, July, 16, 1890.

I have taken THE CIRCULAR for several years and each year it seems to interest me more than it did the preceding year.

GEO. S. MELVILLE.

Syracuse, N. Y., Aug. 2, 1890.

Your CIRCULAR is invaluable in a great many respects.

A. J. STETSON.

Ft. Wayne, Ind. July, 15, 1890.

I am sure one gets his two dollars worth in your paper.

J. FERD. PIETZ.

Newark, N. J., Aug. 5, 1890.

We begin at the front cover and do not tire until we reach the outside of the back cover and wish there was more of it. Fashions in Jewelry, Mechanical Ocular Defects and advertisements when cuts are used play a big part; we find we cannot afford to dispense with the reading of them, we find them of very great importance as well as benefit. A. D. SELOVER.

Savannah, Ga., Aug. 21, 1890.

Your Mechanical and work shop notes possibly stand stronger as items of real worth; your Trade Gossip fills a place, WHILE THE GENERAL MATTER FILLS A WANT THAT NO OTHER TRADE PAPER FURNISHES TO THE SAME EXTENT. Its advertisements have been of some benefit, bringing to our notice firms "we knew not of"; on the whole we think you are in the right road.

THEUS BROS.

Norfolk, Va., July, 15, 1890.

We do not see where there can be much improvement in your excellent journal filled as it is with interesting and useful matter from which the most casual reader can derive both pleasure and profit. C. F. GREENWOOD & BRO.

Grinnell, Iowa, July, 31, 1890.

I commence at the advertisements and look it all through; then I get a good idea of all the new styles and what is going on in the jewelry trade. H. P. PROCTER.

Lafayette, Ala., July 25, 1890.

We are well pleased with the book and would not be without it.

NICHOLSON & LEFFLER.

Pottsville, Pa., July, 28, 1890.

We know of no circular or paper that give us so much information and of such intelli ent character. R. C. GREEN & SON.

Fashions in Jewelry

A Lady's Rambles Among the Jewelers.

THE PROMINENCE OF THE TRIANGLE—REVIVAL OF OLD STONES.

SOMETHING has been previously said of geometrical forms and the fashion of working them out in precious stones. This month a preference is noted for the triangle, and some of the ways of expressing it are ingenious. Handsome stones are cut when practicable in triangular forms; notably the opal. A striking brooch was observed in which the center was a large triangular opal. This was wreathed in diamond foliage with enamels for buds. On each side was an oval opal similarly wreathed. These made the base line of a large inverted triangle, with the apex downward defined by the pendant of emeralds and diamonds

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A PALE green topaz brooch has in its center a large topaz sunk in yellow Roman gold which is wrought in rich foliations. The base line in the triangle which it forms is continued by smaller triangular topazes imbedded in the same manner. The shape is carried downward to the apex with similar topazes imbedded in gold.

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A DIAMOND necklace indicates the preference for triangular forms in its pendants which consist of triple rows of stones falling from the main band, not in garlands or festoons, but in vandykes, or five triangular forms.

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THE right angle is introduced as a brooch by means of a buckle of rubies through which pass two diamond strings that are carried through a loop and thence fall ending in tassels. The device is novel and pretty.

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CIRCULAR forms in brooches are not new but the method of treating them is constantly varying. A most lovely combination of both color and form is worked out in interlaced curves of slender white enamel sprinkled with opals and pearls.

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A FANTASY that has suddenly sprung up is for bird's heads in enamel crested with diamonds. Here is the wide staring owl in gray green enamel, the ruffled grouse, birds of more brilliant plumage, and wonderful head rigging, with every feather carefully copied from nature in enamel and gems.

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THERE is a decided evidence that the old-fashioned semi-precious stones are coming into vogue again. Chief of these is the amethyst. No stone is set off more royally by Roman gold. It is in this setting we find it, the gold being worked into rich Renaissance forms with the amethyst set heart-shaped and en cabochon, in the center of the gold. Sometimes the stone is further outlined by a row of small pearls, but to my fancy pearls are a little out of tone with the rich color of amethyst and gold. A variant of the style consists of two small amethyst pearls.

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THE carbuncle follows the amethyst, and welcome it is. In point of becomingness the carbuncle always ranked high, and there are many dark hued women who will gladly welcome it again. It is set as the amethyst, heart shaped in gold foliations.

SLOWLY but surely coral is making its way again. Brooches of the season are found of circular interlacings of gold, with the centers formed of oval pieces of coral, radiating and cross-shaped and rising mound-like in the center. Coral also has the merit of becomingness, and the fact that there is to be gold jewelry with stones for those who cannot afford to have it sprinkled with diamonds in the luxurious manner that prevailed last season, is one to be widely circulated.

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THE beauty pins continue to hold their own, but the Duchess of Devonshire and Madam Recamier, who have so long held rival courts, give way, for the star of Josephine, Empress of the French, has arisen.

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RIBBON bows of plain gold with a diamond in the center are dainty fastenings for laces and bonnet strings. The bows are not flat, but present their slender edges up exactly as do the milliner's bows.

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THE forget-me-not seems to be practically exhaustless as a decorative form. It is especially prominent this season in gold jewelry. Circular brooches of forget-me-nots are made in wreaths, with their stems used in the outer curving forms. A larger flower in the center often has a diamond enclosed, or possibly a gold pin head. In the more expensive brooches such flower encloses a tiny diamond. Other brooches have no gems, but are made of ten forget-me-nots alone. Scarf and stick pins are made in crescents, horseshoes, hearts and wreaths of tiny forget-me-nots.

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AMBER shell hair pins are shown with forget-me-nots that shine like stars. Sometimes they are placed as wreaths, again as crowns, or follow the course of the perforated carvings.

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HEART-SHAPED wreaths of forget-me-nots or of Florentine forms have a single diamond hanging from the indented point. The center of the wreath is left open. This is a taking design.

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THE gold tiara which was introduced last year seems to be firmly established. Those of the present season are more elaborate. The plain fillet which demanded Grecian style of hair dressing, is replaced by diadem shapes in rich Renaissance forms in relief, and in interlacings which go better with curls and crimps than the severer styles. Another form is the inch wide shell band ornamented with wreaths and garlands in relief and sparkling with diamonds. The regal effect of these in full dress is widely appreciated. The tiara exhibits another merit in assisting to keep the coiffure in order.

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HOLLOW ware bracelets with a click fastening are among the preferences this season. They conisist of great variety in the ornamentation. It has already been noted here that jewelled insects and hearts share in popular favor.

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SUPERB crucifixes of gold are produced, the cross being in dead gold and the figure highly burnished. Those which are especially suitable for priests and other ecclesiastical dignitaries are repeated in smaller shapes, and are attached to rosaries of gold beads, which for those who are devout and can afford such luxurious aids to devotion, are a beautiful possession. Similar rosaries have been brought out in silver and are already widely used.

SQUARE lockets in platinum and gold in waves, plaits and checker board styles for men's wear have a steady call.

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YELLOW topazes over two inches long make the clasp for gold bead purses.

Trifles in Silver.

THIS entire department might almost be made up of trifles in silver. One wonders what the ingenious mind of man will think of next. It is flattering to remember that almost all this mental effort is exerted for the benefit of the opposite sex.

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TEA vases for individual cups are produced in the form of acorns, hearts and bird's eggs. These are both plain and covered with repoussé work. The silver is pierced with fine openings that are imperceptible in the carved work.

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HEART-SHAPED perfume cases are small enough to be held in the hollow of the hand or slipped in the glove. They enclose a tiny sponge and the lid is perforated.

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NO LONGER a novelty, but still one of the most popular articles is the acorn emory. These emories have been vastly improved by covering the emory with various tinted chamois. Those in the dark lead and brown tints are especially pretty.

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OLD fashioned bead purses are made square and are silver mounted. An advantage of the shape is that it can be rolled up and carried in the hand.

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CUSHION shaped salt cellars with scroll feet are pretty and new.

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A BURNISHED silver mortar in its carriage, which is in dead finish, is a new cigar holder.

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TO LIGHT cigars, a rough finished globe in which the face of the man in the moon is formed by rude indentations is mounted on a standard, the base of which is used for ashes. The globe holds the alcohol and the wick protrudes through the top.

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AN ingenious cigar lighter is a piece of a folded letter with a burned end simulated in porcelain. The hollow inside is intended for alcohol, and the wick passes out a crevice.

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JARDINIERES in English plated ware are curiously treated in transparent enamel. The advantage is that they can be kept clean by merely rubbing them off with a cloth. These jardinieres serve equally well as ice coolers.

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LIQUEUR sets, consisting of one or two decanters with the glasses, are held in plain silver bands on a silver base. The glass is ornamented with fine closely set horizontal engraved lines.

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LARGE cylindrical salts bottles intended for the toilet table are of glass, with deep overlapping silver covers. Both the glass and silver are striped with fine vertical lines.

SMALL glass bottles, not as large as the little finger, are mounted in silver as vinaigrettes.

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A NOVEL silver pitcher has a square body on which is set a circular neck. The lower part is covered with pictures and is oxidized. The round part has spiral repousse forms.

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A TREMENDOUS flask, which it seems might have been designed for a member of the Pelican club, has a Grecian "mill" engraved on the cup.

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VINAIGRETTES of porcelain ornamented in pate surpate are mounted in silver.

*** *** ***

NO prettier ornament for the writing table than a little silver clip mounted on a smoked ivory base.

*** *** ***

ROSE jars of perforated silver and glass are pretty and desirable.

Electro Deposit Ware.

ONE of the prettiest and most novel manifestations of that magician of our century—I mean electricity—is seen in the electro deposit silverware. There is scarcely a material which has not been made subject to it; wood, shell, porcelain, glass, are alike adaptable, and new and striking combinations result, independent of the artistic skill which has been brought to bear. The process is, of course, kept secret, and the perfection to which it has been brought is seen in the fact that its use is apparently without limit. It seems to be a somewhat costly process, but at the same time the marvellous beauty of contrast in textures which constitutes largely the charm of the new process is irresistible. It may be remarked in passing that only pure silver can be used in this manner, or at least only the necessary amount of alloy for working, so that no hall mark is needed to guarantee its genuineness.

*** *** ***

THE present acceptable mode of treatment in the new electro-deposit ware is that of perforated ornament, the silver furnishing the design, and the other material, glass, shell or what not, the relief. The designs are usually floral, but in other instances the Japanese treatment of forms is used. A feature of the ware is the beauty of work in relief.

*** *** ***

ESPECIALLY beautiful is the silver deposited on cut glass. Some times it is made to follow in alternate lines the favorite spiral treatment, and again it overlays the defining facets in square cut glass. The differing brilliancy of the glass and silver produces most effective results.

*** *** ***

AN especially beautiful object is a glass decanter overlaid almost to the neck with a design of grape leaves and grapes. These are in relief and are modelled with as careful attention to the caprices and graces of the natural form as if done in repoussé work. Other claret jugs are in flat relief, which makes a net work of intricate floral forms.

*** *** ***

A DECIDED novelty are the wine glasses garlanded by the new process with silver. Here the combinations of color, as in the red and green of claret and hock glasses showing through the silver perforated ornament, furnish a new and attractive decoration for the table.

Long necked coffee ewers and the attendant creamer and sugar pot of delicate white porcelain shining through a moss of silver foliage, is among the beauties of the new process. It may be remarked here that the silver in the flat relief is burnished, and all the force of contrast between the milky translucent porcelain and the brilliancy of the metal is brought out.

*** *** ***

Porridge bowls and plates of china overlaid with silver ornamentation are produced in this manner. The color of the under ware is, of course, a matter of taste, and presumably may be ordered in harmony with the table service, in tone with surrounding decorations, or of that color which suits the complexion best.

*** *** ***

There is some curious work with shells in electro-deposit ware. Two oyster shells set back to back, bound and overlaid irregularly with silver, serve as salt cellars. Another salt cellar is a small spiral shell with a deep receptacle and of exquisite cream and amber markings. This is mounted in silver so as to enhance rather than obscure any of the beauty of the shell. This treatment of shells opens a new field at a moment when there is renewed interest in collecting shells. It will suggest to every one a method of preserving shells of peculiar beauty or as souvenirs of travel.

*** *** ***

Salt shones of white porcelain are bound in silver, which obviates the objection to silver salt spoons on account of corrosion.

*** *** ***

Small French vases of solid color with landscapes in enamel are overlaid in electro-deposit of silver, the metal ornamentation being applied so as to furnish a framework around the painted ornament.

*** *** ***

Of the making of flasks in electro-deposit ware there is no end From the timid, modest wild flower to the bold hunting scene, all styles and methods of ornamentation are used. In point of appropriateness none are to be preferred to the imitations of basket wares in silver.

*** *** ***

Brilliant cut glass paper weights are produced in electro-deposit ware, by selecting according to some geometrical design certain blocks and planes for incrusting with metal.

*** *** ***

Bureau trays of glass and porcelain, and tiny catch-alls of the same materials, are overlaid with silver ornament.

*** *** ***

Buckhorn mounted in silver is used for corkscrews.

*** *** ***

Buckhorn and cut glass carving rests are produced in electro-deposit ware.

*** *** ***

Shoe horns, with the handles overlaid with silver ornamentation, are among the novelties.

*** *** ***

The devices in umbrella handles are bewildering in variety. One that piques curiosity as to the method consist of small knotted ropes around the knob, which is of Wechsel wood. Just how the strings were tied, except by hand, as Dundreary would say, "is what no feller can find out."

Canes admit of the same treatment. These are of Wechsel wood and are most distinguished as large knotted sticks, with the silver deposited so as to leave irregular spaces after the Japanese manner.

China, Bric-a-Brac and Other Novelties.

Card cases of white kid are illuminated like old missals.

*** *** ***

Imagine orange pekoe turned from a tea equipage of white perforated sevres.

*** *** ***

Cauldon ware in royal blue, with ornamentation in pate surpate is among the season's wares.

*** *** ***

Dainty trifles for the toilet come in Copeland ware with gold ground, sprinkled with dots of turquoise blue in relief.

*** *** ***

Minton toilet fancies are sprigged with tiny flowers like old-fashioned calico.

*** *** ***

Art glasss toning down with deep green corners in new and beautiful forms.

*** *** ***

Doulton plates with pale wild rose decorations outlined with gold and crumpled edges are exquisite.

*** *** ***

A pair of Dresden candlesticks has on the base of each a Cupid, one armed with gun and game bag, the other in the act of taking aim. Around each candle are four white clovers with their leaves. The shades pale green silk.

*** *** ***

Letter receptacles are in old German faience, or, rather, in modern imitations of that ware.

*** *** ***

Because Senator Jones was put off of a street car for not having five cents car fare, his friends have given him a gold headed cane which opens and will hold one hundred nickels.

*** *** ***

A tiny orchid with a diamond center was seen used as a pocket-book clasp.

*** *** ***

Chamois bags in russet tints, silver mounted, are among things coveted.

*** *** ***

Rocking chairs are higher backed and more spindled than ever.

Elsie Bee.

The Sardonyx in Jewelry.

From Paris we hear that the long reign of favor enjoyed by the dimly mysterious moonstone is threatened with a rival in the form of the sardonyx. The jewelers have learned a secret of applying graduated degrees of heat to it, by which its colors can be changed, and so producing from it bunches of grapes and their green tendrils From the point of view of mere novelty, no doubt, the sardonyx worked into such quaint devices and fantasies will be welcomed. But we are learning to demand something more costly or more good workmanship in our ornaments. They must embody some queer meaning or possess some occult attribute. The moonstone enjoys the pleasant reputation of being the bearer of good fortune to its wearer. Round the sardonyx are few, if any, traditions, and little or no poetry, save its place in the holy city of the Apocalypse, and therefore it is hardly likely to oust the moonstone at present.

CINCINNATI

[From our Special Correspondent.]

Cincinnati, Sept. 20, 1890.

Business is better here than it has been for years. The indications of the heaviest movement on record, with good crop reports, promise an exceptional prosperity. A most encouraging feature is the presence of an unusually large number of buyers in all trades. The South is well represented. This is as it should be. The Southern trade properly belongs to Cincinnati, standing as she does at the very gateway. The visitors are cordially recieved, and they in turn are gratified at the great advantages afforded them. There could not be a more substantial sign of activity, or a future promised a brisker movement, than the fact that customers are seeking the market instead of the market seeking the customers. The situation of the retail trade is equally satisfactory. The building trades have never seen such a boom. Surely the bands of lethargy are loosed, and the Queen City is vigorously defending her title as the "Queen of the West."

What better evidence can we have of good times than when commodities bring good prices, and capital commands good rates? He is a lucky borrower who can get money at less than 6%, and even then a big collateral must bolster up the loan, which is understood to be sharp call.

Town-talk, just now, is the subject of the big exposition-bazar to be given at Music Hall by the Ohio Humane Society, beginning November 11 to 22. For seventeen years the Ohio Humane Society has been engaged in the work of preventing cruelty to children and dumb brutes, but its means have been inadequate to the most effective work. The increase of crime demands an increase of humane departments, so it was resolved to open at Cincinnati an exposition-bazar, of such goods—merchandise, wares, implements and products—as the friends of humane effort were willing to donate. Every contributor will receive due credit for his gift, which will be exhibited during the bazar, properly placarded. These goods are to be sold for the interest of the society. We are asked to appeal to all manufacturers in our trade journals to donate some or any article they manufacture. In serving a worthy cause they will be greatly benefitted. In the eleven days' exhibition they will be extensively advertised. The management of the bazar is in the hands of 40 standing committees, composed of the leading citizens of the State. Many of the cities and towns will be represented by booths. During the bazar excursion rates will be secured on all roads, thereby inducing great crowds to attend. The woman's department is in the hands of the beauty, wealth and fashion of this State and sister States. The great hall and corridors will be converted into an Arcadia. Wake up, manufacturers, if you want to sell goods in Ohio Indiana, or Kentucky. Show your generosity to a humane cause. Inventors, here is an opportunity to display your genius. All articles may be sent to Commissioner I. N. Laboiteux, care Duhme & Co., Cincinnati, O.

Recently a coterie of jewelers were discussing the increase of diamond work in Cincinnati. It has indeed become quite an industry; leading out with the old house of Jonas, Dorst & Co., Jos. Noterman, Gus. Fox & Co., and a host of others, who keep regular benches at this work. Jos. Noterman is the veteran. As manufacturer of mountings he has achieved a wide fame. The latest, catchiest and most original are themes that keep Jos. Goesling, the junior partner, busy every day.

Jonas, Dorst & Co. have increased their capacity on diamond work to four new benches, which gives them now ample room to fill all orders promptly. Mr. Jonas is too well known to the trade as a genius in art to need any introduction.

D. Schroder & Co.—the Co. means that affable jobber, Aaron Herman, whom everybody knows and likes so well. This firm is noted for low prices; this was an afterthought of Aaron's, who was studying how to get a grip on the trade that would hold. To-day this house ranks as one of the solid jewelry houses in the West.

Strauss & Stern, another Race street house, are claiming big trade. It is remarkable what energy and enterprise can accomplish. Lee is the energy, and Charley the enterprise; we'll bet on this team every time.

Bene & Lindenberg, also on Race, report the biggest August trade they ever had. They are jubilant over the outlook for the holiday months.

Homan & Co, silver-plate manufactures, are in ship-shape again. Their recent fire somewhat retarded their orders, but all the machinery is in working order now, and they are working thirteen hours a day to catch up. They are having a big drive in tea ware.

John Holland, the well-known pen man, has returned from his Western trip. He says California is a great country, climate wonderful, fruit delicious, and—best of all—trade immense. He reaped a big harvest all through the West. Up through Washington he introduced his famous pen.

Oskamp, Nolting & Co., have now five rooms in the Carlisle building, and still their business has grown to such an extent that they need more. "We do more business than all the rest of the jobbers," said Mr. Nolting. "We got our business by paying for it. Some of the old fossils, who are afraid to spend a cent, and are 50 years behind, wonder how we got such a big trade. We have been liberal in advertising, in our catalogue, and everywhere we thought a good scheme. We stand monuments to-day of well-spent money." This is a good point. Trade cannot stand still. It has either to increase or diminish. The intelligent jobber pushes his business into every practical avenue, without regard to dimes and dollars. It has to be pushed, or it will fall back on you and you are buried in the ruins.

Duhme & Co., are becoming very popular for solid gold and silver watch cases. They have lately increased their facilities in their case factory, and have modern machinery and skilled workmen, who have turned out cases that are the admiration of the general public. Some of the new patterns shown your correspondent were exquisitely wrought and ornamented. They are made in all numbers, and can be ordered by numbers. Chas. Ankeney, manager of the wholesale department, is the spirit and push that is bringing these fine goods into greater popularity.

Wadsworth & Co., the Newport watch case factory, are kept busy filling orders for their handsome line of gold filled watch cases. Their 6-size is now ready, and equals in appearance and workmanship the best solid gold cases. They have lately largely increased their force, and are compelled to work overtime to supply the demand for their goods.

A Handsome Piano Lamp.



Attention is directed to the illustration given herewith of a pattern of the extension piano lamps made by the Bradley & Hubbard Mfg. Co. This company's line of such wares is the most complete ever shown, and embraces numerous new designs in the lower prices as well as the more elaborate goods. The patent extension in these lamps is perfect; it works automatically and does not get out of order. In its working it is very simple; when it is desired to raise the lamp, the rod under the fount is grasped and lifted up to the required height; to lower it, it is only necessary to push it down; no clutches requiring attention are employed, and the lamp will remain in any position. All the company's lamps are fitted with the celebrated "B & H" burners, acknowledged by all to be of superior quality.

HENRY HAHN & CO.,

23 & 25 ARCADE, CINCINNATI, O.

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CINCINNATI.

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SILVERSMITHS,

AND MANUFACTURERS OF

STERLING SILVERWARE,

Nos. 808 & 810 GREENWICH STREET, NEW YORK CITY.

OUR TRADE ORGANIZATIONS

ANNUAL MEETING OF THE NEW YORK JEWELERS' ASSOCIATION.

THE New York Jewelers' Association held its annual meeting and election of officers at 2 o'clock, Sept. 9. There was a good attendance of members. President F. S. Douglas occupied the chair.

After the reading of the Secretary's report and the transaction of other business of a formal nature, the election of officers for the ensuing year took place. J. B. Bowden was proposed for President, but declined the nomination owing to his numerous business obligations. The election resulted as follows: Henry E. Ide, President; William L. Sexton, Vice-President; and B. H. Knapp, Treasurer. Board of Directors—N. H. White, William R. Alling, B. H. Knapp, H. W. Butts, George W. Shiebler, John G. Bacon, Alfred H. Smith, Ludwig Nissen and F. H. Webster.

Mr. Ide, as Treasurer for last year, made a report, which showed that the Association is enjoying its usual prosperous condition. On motion it was decided to hold an annual dinner, and the matter was referred to the Board of Directors.

THE JEWELERS' LEAGUE.

AT the monthly meeting of the Executive Committee of the Jewelers' League, held on Friday, September 12th, there were present Vice-Presidents Sloan, Greason, Bowden and Lewis, and Messrs. Howe, Untermeyer and Sexton. There were six requests for change of beneficiary granted, one application for membership was rejected, one was referred for investigation, and the following applicants were accepted as members: Elmer S. Cheney, Chicago, Ill., proposed by E. G. Thearle and R. Mammoser; Thomas N. Donnelly, Chicago, Ill., proposed by R. J. Morse and G. P. Titus; Albert A. Fenker, Cincinnati, O., proposed by H. Lange and L. E. E. Hummel; Clemens Hellebush, Jr., Cincinnati, O., proposed by H. A. Scofield and J. Becker; Frederick M. Lund, Chicago, Ill., proposed by O. C. Hansen and C. J. Horton; John C. McAnarney, Rockford, Ill., proposed by John T. Buker and A. M. Weinberg; Chas A. Remme, Newport, Ky., proposed by J. Becker and R. H. Galbreath; Herman J. Schockman, Cincinnati, O., proposed by A. Steinau, Jr. and L. E. E. Hummel; Richard Stephens, Chicago, Ill., proposed by D. B. Holst and W. C. Potter; Najar Taylor, New York City, proposed by A. W. Sexton and W. L. Sexton; Ralph Van Keuren, Savannah, Ga., proposed by T. N. Theus and S. E. Theus; James H. Winn, Chicago, Ill., proposed by J. L. Weatherstone and A. W. Adcock.

THE JEWELERS' SECURITY ALLIANCE.

THE regular monthly meeting of the Executive Committee was held at the Alliance Office, on Friday, September 12th. There were present Vice-Presidents A. K. Sloan and David Untermeyer; J. B. Bowden, Chairman; Chas. G. Lewis, Treasurer; Messrs. Stuart, Karsch and Geo. H. Hodenpyl, Secretary.

The following were admitted to membership: John T. Buker, 117 W. State street, Rockford, Ill.; P. S. Bartlett & Co., "Four Towns" Block, Elgin, Ill.; Nelson E. Benoit, 310 W. State street, Rockford, Ill.; M. A. Eiseman & Bro., 251–7 Monroe street, Chichago, Ill.; Albert C. Henry, 104 W. State street, Rockford, Ill.; Kuhn & Dick Jewelry Co., 408 Main street, Quincy, Ill.; F. Lewald & Co, 196 Madison street, Chicago, Ill.; Mayo, Groff & Co., 169 State street, Chicago, Ill.; James M. Odie, 8 Front street, Worcester, Mass.; Joseph C. Peers, 315 W. State street, Rockford, Ill.; C. D. Peacock, 96–98 State street, Chicago, Ill.; Roodstad Bros., 35 Chicago street, Elgin, Ill.; Shourds & Kasper, 66 State street, Chicago, Ill., Spaulding & Co., 168–170 State street, Chicago, Ill.; A. Stowell & Co., 24 Winter street, Boston, Mass.; A. Steinau & Son, 405 Fourth avenue, Louisville, Ky.; Elmer E. Sandborn, 236 W. 125th street, New York City; A. G. Schwab & Bro., 53 W. 5th street, Cincinnati, Ohio.; Geo. F. Wadsworth, 182 State street, Chicago, Ill.; Wheat & Hancher, 1231 Market street, Wheeling, W. Va.; Weis & Oppenheimer, 192 Broadway, N. Y.

NOTES.

The New York Jewelers' Board of Trade has appointed M. D. Rothschild, John C. Downing, David Keller, James E. Spencer, H. D. Sherrill, S. F. Myers and Geo. E. Fahys, a committee to arrange for its second annual dinner, to take place next January

Geo. Carlton Comstock, counselor for the New York Jewelers' Board of Trade, returned from a two month's tour through Europe on Sept. 11.

J. B. Yates, 191 Broadway, New York, has withdrawn from the Jobbers' Association.

At the regular monthly meeting of the Jewelers' Building and Loan Association, held on Sept. 8, a sale of money took place, $10,000 being sold at a premium of 40% per month per share. The Association is rapidly acquiring new members, from the jewelry as well as other trades. The rapid growth and the attainment of a paying basis of this Association reflect great credit upon the management.

Death of Herr Goring.

On Sept. 6 Herr Göring, the old watchmaker who recently attained his 106th birthday, died at Hamburg, Germany, the city of his late residence. He was born near Chaux-de-Fonds, Switzerland He served in the French army under the first Napoleon, and made the campaign to Moscow in 1812, from which he was one of the few to return home safe and sound. At the time of his death he was still working at the bench.

The following, illustrating the independence of the old man, is quoted from the June number of the CIRCULAR:

"The fact of his demanding a credit at a material store, and stating his indigent condition to the dealer, first drew the attention of the horological unions throughout Germany to him. Balls, festivals, etc., were instituted, and in a short time a sufficient sum of money was collected to keep the old gentleman above want for the remainder of his days. Being a bachelor, he kept "bachelor's hall" ever since his young days. Some kind-hearted watchmaker proposed to pay for his board and lodging at a good boarding-house, a suggestion which Mr. Göring utterly flouted. He was born near Chaux-de-Fonds, Switzerland, and the overseer of the poorhouse, near Hamburg, offering him a finely furnished room at his institution with plenty to eat and drink, Göring indignantly replied: 'I am a Swiss, and no free Swiss permits himself to be shut up in prison pens. I do not accept.' He is still cooking his own meals."

Obituary.

JOSHUA S. COOLEY

One by one do the representatives of the older jewelry trade pass into that country from "whose bourne no traveler returns." Joshua S. Cooley, whose death occurred on Sept. 4, at Lake Mahopac, N. Y., from apoplexy, was in his day one of the conspicuous figures of the jewelry trade, and his demise elicited expressions of regret from many.

The deceased was born in Hartford, Conn., on August 20, 1828. His parents were quite well-to-do, his father being a physician with



JOSHUA S. COOLEY.

a good practice. In his early youth his family moved to New York, and in 1843 he entered as an apprentice the factory of Randel, Baremore & Co. Here he mastered his trade, and subsequently worked for Samuel Chamberlain, Reuben Price and Samuel J. Smith. During this time he displayed unusual skill as a workman, and considerable art as a designer. It was while in the employ of the latter firm that he formed the lasting friendship that, in after years, was a constant subject of remark. At this period in the trade history Samuel J. Smith was the sole manufacturer, with one exception, Smith & Ginnido, of imitation diamond jewelry, and did a successful business; but with the advent of the Rebellion, which demoralized general business, his trade was so crippled that his sales during '62 amounted to but $10,000. This condition of affairs threw the young men into a state of semi idleness, and, feeling certain that they could hardly be worse off, they determined to start in business on their own account. With a borrowed capital of about $3,000, the young men, under the name of Sillcocks & Cooley, commenced to manufacture imitation diamond jewelry on January 1, 1863, on the top floor of 14 Maiden Lane. Mr. Cooley superintended the factory work and designing, while Mr. Sillcocks sold the product. The business proved a success from the start, each clearing $6,000 the first year, which being kept in the business placed it upon a solid foundation. They adhered to the original line until 1870, by which time their business had become among the most prominent in the trade, when they commenced to manufacture a general line of medium class jewelry. Salesmen were engaged, and business spread to every district of the country.

In the year 1875, by which time both gentlemen had amassed a fortune more than sufficient to allow them to retire, they were solicited to take charge of the Celluloid Novelty Company, then a year old and in an unsettled condition. Mr. Sillcocks saw the successful future of celluloid, as though it were a tangible object; but Mr. Cooley refused at first to associate himself with the enterprise, claiming that he had worked hard enough during his life to retire. But, after one night's consideration, the strong friendship between the men prevailed, and he became vice-president of the company, while Mr. Sillcocks entered upon its presidency. The phenomenal success of this enterprise, in a great measure due to the administrative abilities of its executive officers, is well known to every business man. In 1877 the Celluloid Brush Company was organized, Mr. Cooley assuming the presidency, and Mr. Sillcocks the vice-presidency. About four years ago, through ill health, Mr. Cooley retired from business.

It is thus seen that the life of Mr. Cooley is inseparable from that of Mr. Sillcocks; constant companions both in business and pleasure for thirty years, these gentlemen were more than brothers.

Perhaps the predominattng quality of the deceased was an extreme generosity. Though he made no show of giving, many instances displaying this characteristic of his nature are cited by those who knew him. Though his branching out in the same line of business as himself excited the animosity of "Sam" Smith, and an unfriendly feeling existed between the two men, yet upon the death of his old employer he undertook to sell out the business for his widow without the least recompense. The sale realized a good sum which he profitably invested, placing the widow in fair financial circumstances. The deceased was a man of remarkable joviality, ever ready for and susceptible to a joke. These characteristics, together with the sterling qualities of integrity and justice, won for him the love of every one with whom he came in contact. Though a hard worker in the interests of the Tammany Hall society, a very popular politician, he never sought position. He was a member of various lodges, and was an exempt fireman. A wife and two married children survive him.

The funeral services were held on the 6th Sept., at the Central Presbyterian Church, Fifty-Seventh street, New York. Deceased's friends and relatives attended in great numbers; and the Masonic bodies with which he was connected were also largely represented. The Association of Exempt Firemen sent a delegation. The interment was at Greenwood Cemetery. The pall-bearer's, all intimate friends of the deceased, were: Josiah Benton, W. S. Sillcocks, John A. Riley, J. F. Connery, J. C. Kamp, James R. Waterlow, James Yearance, C. G. Carpenter, Merritt E. Sawyer, Wm. A. Martin and G. Otto.

JOHN W. WAGNER.

John W. Wagner, of Hummelstown, Pa., after an illness of three weeks with typhoid fever, died on the evening of Sept. 4. The deceased moved to Hummelstown a few years ago, and rapidly built up a good business.

J. W. Wagner was born in Dillsbury, Pa., April 9, 1863. At 17 years of age he apprenticed himself to Noah Bailey, a jeweler of his native town. At the end of four years he opened a store of his own at Boiling Springs, Cumberland County. He had been in business at this place about one year, when he availed himself of a good opportunity which offered itself to establish a store in Hummelstown. On April 17, 1887, Mr. Wagner was married to Miss Catharine Baum, daughter of Michael Baum, of this place, who with one child, aged nearly two years, survive him. The deceased was a member of several societies, which conducted his obsequies.

HENRY V. LAMBERT.

The New York jewelry trade were grieved to learn of the death o Henry V. Lambert, of Lambert Bros., 968 Third avenue, which occurred suddenly on September 17, while in the store. The caus

of his death was heart failure. His malady, it is said, originated with the "grip," which took such a firm hold on his system as to weaken him considerably. He rallied somewhat from its effects, but never showed the robust health which was his previous to the attack.

Henry Vitus Lambert was born on June 13, 1857, at Trier-on-the-Moselle, Germany. He came to America when a lad of sixteen, and occupied various positions in some prominent houses in New York. In 1885 he was admitted to the firm of Lambert Bros. He was very popular, and all who knew him had some kindly words to say for him. He was a member of Mount Neboh Lodge No. 257 F. & A. M., Washington Irving Union, Peter Cooper Lodge, K. of P., New York Mannechor and Fidelo Club, all of whom were invited to attend the funeral, which took place yesterday morning. He was unmarried.

The Late Horace C. Wilcox.

Pres. Meriden Britannia Co.

The portrait of the late Horace C. Wilcox, a lengthy obituary of whom appeared in the September number of THE CIRCULAR is reproduced from the latest photograph of the deceased gentleman. The likeness is a very good one, every characteristic of his features being well delineated.



—The office of L. Tannenbaum & Co., 65 Nassau street, New York, presents a very busy appearance these days. Since the return of the senior member from Europe, the office has been literally overrun with buyers, who are all anxious to secure the bargains which he has the reputation of offering on his fall importations. This year these importations have been exceptionally heavy and exceptionally cheap, and the consequence is that Mr. Tannenbaum has scarcely time enough at his disposal to snatch his midday bite, so constant and so persistent is the stream of purchasers. Fancy stones, rare specimens, staple goods, in short, everything that the dealer or the gem fancier can require is to be found in the stock of this firm at prices that will defy competition. There is probably no man in the importing business who is better posted in the ins and outs of the business than he, and those who take advantage of this knowledge are sure to be the gainers. It is well to remember that their stock is the most comprehensive, and embraces everything that the jeweler or mineralogist may desire—diamonds, sapphires, rubies, emeralds, opals, semi-precious stones in great variety, and collector's specimens the most unique and rare.



[THE CIRCULAR is not responsible for the opinions or statements of contributors, but is will ng to accord space to all who desire to write on subjects of interest to the jewelry trade. All communications must be accompanied by a responsible name as a guarantee of good faith. No attention will be paid to anonymous letters. Correspondence solicited.]

THE ORIGIN OF THE LEVER BUTTON.

Providence, Sept. 9, 1890.

To the Editor of the Jewelers' Circular:

Dear Sir:—I take exception to a statement of fact in your September issue, by your Providence correspondent, who states that Messrs. Fred I Marcy & Company, of this city, were the first to introduce the "flopper," or non-separable button to the American jewelry trade. As a matter of history, Howard & Son were the first to introduce in rolled plate, the button referred to, and to give it the more euphonious and correct title, "lever," by which it is universally known. Messrs. Howard & Son reproduced exactly the French button which was the inspiring model for the Yankee manufacturers. This button was furnished with a shoe, which in shape was an irregular ellipse, much longer on one side of the post than on the other, and very similar to the celebrated "Pointer" collar button, now so much in vogue for wear at the back of the neck, the long end of the shoe operating as a finger, and holding the scarf in place.

Soon after the introduction of the first lever button, which was called from its French origin, the "Parisian lever," Messrs Fred I. Marcy & Company offered to the trade the "Acme lever," with an oval shoe, and at about the same time Messrs. Howard & Son abandoned the elliptical shoe, introducing a round one in its stead and changing the title to "American lever."

The round shoe lever button first made by Howard & Son, is now, and has been for years, the only one acceptable to the trade.

The above is positively a true history of the birth of the lever button, as an article of American manufacture, and my statements are susceptible of proof, if necessary.

Yours truly, STEPHEN C. HOWARD.

Apponaug, R. I., Aug. 11, 1890.

I have Volumes X. to XIX., but am short of No. 1, Vol. XI., Feb, 1880; Nos. 3 and 8, Vol. XIII, April and September, 1882 Nos. 1 and 3, Vol. XV., February and April, 1884; No. 12, Vol. XVI., January, 1886. I have Volumes X., XII., XIV., XVII., XVIII. and XIX. complete and may be able to find the missing numbers of the other volumes. They are all in good order. Would sell them at a very low figure. RICHARD TIPPING.

Penn Yan, N. Y., Aug. 5, 1890.

We like it, and welcome your visits, always dropping all things as soon as you make your appearance, to just glance over the news, and get something to digest, as we wait for a convenient time to take it all in. E. H. HOPKINS.

Omaha, Neb., July 16, 1890.

I have been a constant reader of the CIRCULAR for many years.

C. S. RAYMOND.

Keokuk, Iowa, July 25, 1890.

If you traveled through the West you could notice the difference in the windows between the gentlemen who are subscribers to the CIRCULAR and those who are not.

H. W. LINEBAUGH & SONS.

Neglected Problems.*

No. 2.—Part V.

WHEEL AND PINION GEARING AS LEVERS TRANSMITTING POWER.

By "Excelsior."

(*Continued from Sept.* Circular, *page 44.*)

THE INCLINED PLANE.

The inclined plane is another illustration of the simultaneous action of force and reaction. In fig. 27, *A C* is the inclined upper surface of a triangular body *A B C*, upon which rests a body *W*, by gravity. The direction of the force of gravity is vertical, and this force is therefore represented by the vertical arrow 1. *W* is supported by an upward force, represented by the arrow 2; *i. e.*, this force acts parallel to the incline *A C*. As *W* presses against *A C* with a certain force, *A C* resists by reaction and presses against *W*,

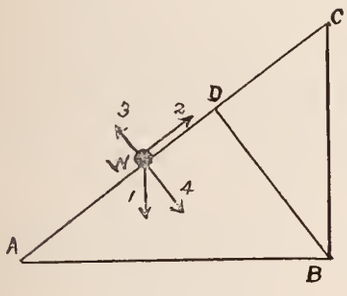


FIG. 27.

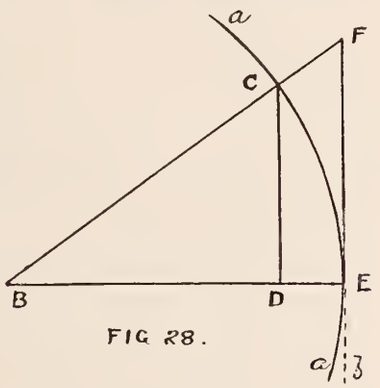


FIG. 28.

i. e., supports it, and the direction of this reaction is shown by the arrow 3. For convenience *W* is represented as a point resting on *A C*, acted upon by the forces as indicated by the arrows. The law regarding the direction in which action and reaction take place is that *when a body is urged along a smooth surface, this mutual action can only take place along their common perpendicular at the point of contact.* The real pressure of *W* against *A C* would be shown by the arrow 4, and the reaction of *A C* against *W* is the direction of arrow 3, as before stated—those arrows being perpendicular to both *W* and *A C* at the point of contact, as required by the law just cited. But as *W* is a weight, and acts by gravity, the direction of its force or weight is shown by arrow 1.

We now have three forces acting upon the body *W*, which we will suppose to balance each other, so that the body *W* will remain stationary. If the force 2 was a little stronger the body *W* would of course be urged up the incline; if it was weaker, *W* would slide down. Now we want to know the relative amount or strength of these forces when they are in equilibrium and *W* is stationary. In fig. 27, *A C* is the inclined plane, *A B* is its base, and *B C* its height above the base at its upper end. These lines make a triangle *A B C*, whose side *A C* is parallel to force 2, and *C B* is parallel to force 1, but we have nothing parallel to force 3. As force 3 is perpendicular to *A C*, we draw a line *B D* from *B* to *A C* and perpendicular to it. We have now a triangle *B C D* whose sides are parallel to the forces 1, 2 and 3, and by a process of calculation from their relative lengths we may ascertain the amount of those forces. To do this we employ a short geometrical formula, but I will make it so clear that the workman will find it as easy as simple arithmetical calculation. According to the formula:

$$F^2 = F^1 \text{ sine } B; \text{ and } F^3 = F^1 \text{ cosine } B.$$

The letter *F* stands for force, and the figure appended shows the number of the force. Force 4 is of course equal to force 3, since action and reaction are always equal.

First we will have a short lesson in geometry, to explain the meanings of the terms used, and the workman will probably be pleasantly surprised to find how easy geometry is to understand. The inclination between two lines is called the *angle*, and the point where they meet is its *apex*. Thus, in fig. 28, *B* is the apex of the angle between the lines *B C* and *B E*, and this angle is expressed as the angle *C B E*, or simply the angle *B*. When there are more than one angle around the same point, as around *D*, it is necessary to give all three letters, in order to indicate which angle is meant, as *C D E* or *C D B*. The middle letter is always the letter at the apex of the angle spoken of. When there is but one angle at the apex, as at *B*, it is only necessary to mention the letter at the apex to designate the angle, as, the angle *B*. When one line is perpendicular to the other the angle is a *right angle*, and each line is said to be a right angle to the other. An angle greater than a right is an *obtuse angle*; if smaller it is an acute angle. A right angle is divided into ninety equal parts called degrees, *i. e.*, it contains 90° of inclination, and larger or smaller angles are expressed by the number of degrees they contain.

From *B* as a centre, with a radius *B E* of 1 inch, we draw the curve *a a*, which is a portion or *arc* of a circle. Then *B C* will of course be 1 inch long, as it, like *B E*, is a radius, (or semi-diameter) of the circle. From *C* draw line *C D* perpendicular to *B E*. This line *C D* is called *the sine* of angle *B*, and the line *B D* is *the cosine* of angle *B*, or the sine of the *complement* of *B*. The complement of an angle is what it lacks of being a right angle or 90°. If the angle *B* was 30° its complement would be 60°, and therefore the line *B D* would be both the cosine of 30° and the sine of 60°. So *C D* is both the sine of *B* and the cosine of its complement.

The sum of the three angles within any triangle is always 180°. In fig. 28, *B D C* is a right angle or 90°, and the sum of angles *B* and *C* must also be 90°. The angle *C* is therefore the complement of angle *B*, and *B* is the complement of *C*. *C D*, the sine of *B*, must be the cosine of *C*, as will readily be found by drawing, from *C* as a centre, with radius *C B*, an arc of the circle, and from *B* drawing a straight line perpendicular to *C D*—for that line would be *B D*, the sine of angle *C*, and *C D* would be the cosine of *C*. We next draw a line *b F*, perpendicular to *B E*, and touching *E*. This line is called a *tangent* to the circle or to the arc *a a*. But for purposes of measuration we use only that portion of the line included between the two sides of an angle, and it is then the tangent to that angle. In fig. 28, *E F* would be the tangent to the angle *B*, because it is included between the lines *B E* and *B F*.

AMOUNT OF WORK DONE ON AN INCLINED PLANE.

Now for the practical application of the foregoing to our problem. The triangle *B D C* is the same triangle we obtained in fig. 27, as representing the directions and amounts of the forces acting on *W* by the directions and length of its sides. Let us suppose, as we have heretofore done, that the weight *W* is 360 lbs. We want to know the amount of its real pressure against the inclined plane *A C* (forces 4 and 3), and the amount of force 2 that is required to balance the other forces and hold *W* stationary on the incline. This we can do by means of the tables found in every geometry and reference book giving the sines, cosines and tangents of every angle from 0° up to 90°. First, we want to know how much the angle *B* is. We can measure it by a graduated sector, if we have one. If not, we can look in the tables to see what angle the tangent *E F* corresponds to.

As before stated, fig. 28 was drawn with *B E* equal to 1 inch. This was done because the tables are computed on a basis of unity, *i. e.*, the radius of the circle is supposed to be 1, and the sines, cosines and tangents are given for such a circle. (It may be 1 inch, 1 foot, or any other dimension preferred.) We will now measure *E F*, for example, and we find it to be ¾ inch, or, expressed decimally, .75 inch. On looking in the table of tangents we find that a tangent of .75 corresponds to an angle of 37°, therefore the angle *B* is 37°. Then looking in the tables of sines and cosines, we find that the sine of 37° is .6, and the cosine is .8, in round numbers. Returning

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to our formula for force 2, we have F^2 is equal to F^1, multiplied by the sine of angle B. As F^1 is the weight W, which is 360 lbs., and the sine of B is .6, we have $360 \times .6 = 216$ lbs., which shows that a force of 216 lbs. is required to hold W stationary on the incline $A\ C$. Multiplying 360 by .8 ($F^1 \times$ cosine B), we get 288 lbs, which is the real pressure of the body W against the incline $A\ C$ (force 4), and the amount of the reaction of $A\ C$ against W (force 3).

The foregoing is the scientific and easiest way of solving the problem. And it is better to measure the tangent $E\ F$ than the sine $C\ D$, because the former is the greater, and the errors of measuring are diminished. But the former would do, by making the drawing on a larger scale.

And now that we know how to solve the problem properly, I would say that it is not absolutely necessary to have any tables, or to know what angle B is, or what sines and cosines are. We can simply draw fig. 27 as directed, being careful to have the length of $B\ C$ just one inch (or foot) long, then carefully measure the other two sides of $B\ D\ C$, and follow this rule: *Each force is equal to F^1 or the weight, multiplied by the length of that side which is parallel to it.* For example, the side of $D\ C\ B$, which is parallel to F^2 is $D\ C$, and its length is 6—therefore $360 \times .6 = 216$, as before. So F^3 or F^4 is equal to F^1, or 360, multiplied by the length of $D\ B$, which is .8, *i. e.*, $360 \times .8 = 288$. This rule is original, so far as I know, and while the reader might perhaps have understood it without the geometrical explanations, I do not regret having cheated him into learning a little geometry, and I hope he will like it so well that he will study it further. A few words about the wedge will finish this branch of our subject.

THE WEDGE.

The wedge is a movable inclined plane. As we have just found, the power of an inclined plane is due to its height and not to its length, and in the same way the power of a wedge is due to its thickness at the large end, and not to its length from there to its point. If a body W, fig. 29, is placed on the inclined plane at C, and slides down to A, it will acquire a certain velocity; and if the same body slides down the other plane from C to A^1, it will require the same velocity as in the former case. (It will be remembered

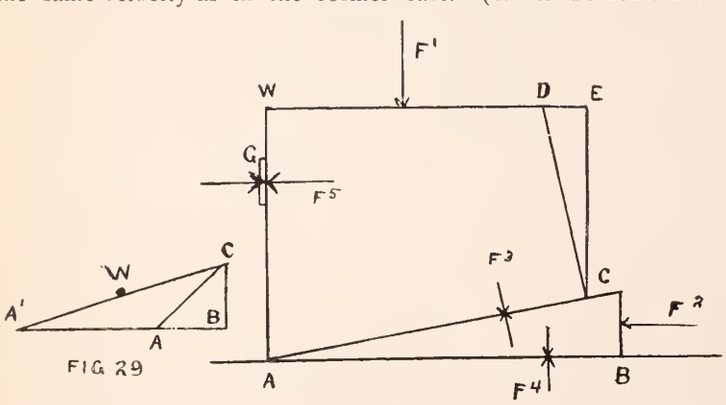


FIG 29

FIG. 30.

that we leave friction out of the consideration at present.) Mathematically expressed, *the velocity does not depend on the angle of the incline* (A or A^1) *but on the vertical height $B\ C$*, which is the tangent of both the angles A and A^1, as will be seen by referring back to fig. 28 and the explanation of it. It will be useful to remember that this law applies to all cases in gearing or other watch work, where the action is similar to that of a wedge or inclined plane.

We may, of course, reverse this process and say that it will require the same amount of work to draw the body W up the incline from A^1 to C as from A to C, if we ignore friction. If we suppose that $C\ A\ B$ and $C\ A^1\ B$ are solid wedges, it will require the same amount of work to drive them between two objects or bodies up to the end $B\ C$, all other conditions being equal in each case. The difference in the action of the two wedges or inclined planes lies in the fact that the latter acts more gradually than the former, *i. e.*, the power exerted is spread over a greater distance on $C\ A^1$ than on $C\ A$, and is exerted less suddenly or abruptly, and, therefore, seems to be less in amount. As a matter of course, if it requires the same amount of work to drive the two wedges between two bodies, it follows that each wedge will exert or give out the same amount of work, *i. e.*, those bodies would be forced apart just as powerfully by one wedge as by the other, provided both wedges act from their points to their ends $B\ C$. Whatever force is exerted on a wedge, the wedge exerts upon something else. A wedge does not store up or contain energy; it is simply the means by which a certain amount of force, applied to it, is by it transmitted and exerted upon some other body, in a different direction or at a different rate or speed from the original force. There is no force gained by the use of a wedge; on the contrary, there is always a loss, from friction, etc.

AMOUNT OF WORK DONE BY A WEDGE.

To make this more clear, let us suppose that the wedge A^1 is say four times as long as the wedge A (designating them by the letter at their point), and that each is forced forward at the same rate of speed. Then the power required to drive A^1 forward will act four times as long as on A; and since A must be forced forward in one-quarter of the time, it will require four times the power during that time in order to do the work. The amount of work done is the same in each case, inasmuch as *work* is equal to *power* multiplied by the *time* during which the power is exerted. Suppose W to be so fixed that it can only move in a vertical direction, as the wedges underneath raise or lower it, and that it weighs 360 lbs.; also, that the wedges are 1 foot thick at $B\ C$, that the wedge A is 1 foot long, and A^1 is 4 feet long, and that each wedge is forced forward 1 foot per second. Then the power exerted by A would be the lifting of 360 lbs. 1 foot per second; that of A^1 would be the lifting of 360 lbs. ¼ foot per second, and it would require 4 seconds to move its whole length and lift the weight 1 foot, from B to C. But as the product of 360 lbs. × 1 foot × 1 second is equal to 360 lbs. × ¼ foot × 4 seconds, it is plain that the *work* done is the same in each case. If we suppose that both wedges are forced under W in 1 second, from end to end, then the same power (the lifting of 360 lbs. 1 foot per second) would be exerted whether the wedge A or A^1 be used. And since the power acts the same length of time, 1 second, in each case, the amount of work done is the same in each case, as will be found by multiplying weight, distance and time, as before. Furthermore, the work done by the wedge is in every case the same as the work applied to the wedge, after allowing for the loss of friction, etc.

All this may be demonstrated by fig. 30, where the wedge $C\ A\ B$ rests on a smooth table, and upon it is a body W whose lower surface $C\ A$ fits the upper surface of the wedge. W is made in the form shown, in order to eliminate from the problem all other questions and principles except those relating to the action of a wedge. For that reason $W\ E$ is parallel to $A\ B$, and $W\ A$ and $E\ C$ are parallel to $C\ B$. The force F^2 which impels the wedge is supposed to act at a right angle to $B\ C$; and F^1, which represents the weight of W, or the resistance opposed to the lifting action of the wedge, acts at a right angle to $A\ B$ and $W\ E$. G represents a block or guide which prevents W from moving laterally, but allows it to move vertically only, as it is moved up or down by the wedge. The two arrows F^5 represent the pressure of W against the block, and the reaction of the block against W. In the same way, the arrows F^3 and F^4 show the directions of the action of the wedge against the weight W and the table $A\ B$ respectively, and their reaction against the wedge. It will be obeserved that the arrows F^3, F^4 and F^5 are all drawn perpendicular to the rubbing surfaces at their point of contact, as required by the law cited at the beginning of this article. But they represent only the *direction* of the acting forces; for the action and reaction of course extend over the whole of the surfaces in contact.

(*To be Continued.*)

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Mechanical Ocular Defects.

Their Nature, Cause, Correction and Relations to Functional Nervous Diseases.

Edited by C. A. Bucklin, A. M., M. D., New York.

[The aim of the author is to produce a clear and thoroughly practical course of instruction on the subject of "mechanical ocular defects," which is entirely void of useless technicalities and within the easy comprehension of every thinking studen without his having had any previous technical or mathematical education.]



WE HAVE seen that convergent strabismus resulting from hyperopia is not a morbid condition; it is simply a symptom which may arise when the hyperopia disturbes the relations between fixation and accommodation to such a degree that at no point for which the individual can fix both eyes can he accommodate. The disturbed relations above mentioned which make it advantageous for the individual to squint may exist as a result of the hyperopia alone. Frequently a combined condition of hyperopia and weak ocular muscles is the cause of the trouble. This makes it possible for strabismus to exist with any degree of hyperopia, without hyperopia or with even slight myopia. In cases where it exists with slight degrees of myopia or emmetropia, the weak condition of the muscles is the element which disturbs the relation between fixation and accommodation to such a degree that squint follows as a symptom.

Squint is always a symptom of some other trouble, and never exists as an independent condition.

There is only a small percentage of hyperopic persons who develop convergent strabismus. No hyperopic person has any desire to look cross-eyed, providing he can see distinctly with both eyes without looking cross-eyed. No hyperopic person will look cross-eyed who can not see distinctly with both eyes, unless he can learn the art necessary to avoid double vision when both eyes are not directed at the same point. This statement is beautifully illustrated by the following experiment: If a concave glass strong enough to be difficult to overcome is placed before one eye, and the other eye is covered, this eye will deviate inward when any attempt is made to produce sharp vision in the eye not covered.

The natural abhorrence of double vision is the only thing which restrains all non-facultative hyperopes from developing convergent strabismus The question which now suggests itself is. What circumstances must co-operate to give rise to strabismus in hyperopic individuals? Donders was the first to consider this matter in a systematic manner, and I consequently give his deduction as being those which most subsequent authors have followed. He states that the circumstances which lead to the development of convergent strabismus are of a two-fold nature.

First—Those which diminish the value of bi-nocular vision.

Second—Those which render convergence easier.

Congenital difference in the accuracy of vision, or in the refructive condition of the two eyes. In hypermetropia the accuracy of vision is often imperfect, whether in one eye or in both eyes. This is in part attributable to astigmatism, in part to a still unknown imperfection of the retina. If the diminished accuracy of vision affects only one eye, then on too great convergence the image of the eye will not so much disturb vision. The same is the case when the degree of *H* in the deviating eye is greater, and the image in this eye is therefore less accurate. In either case, consequently, strabismus will more easily arise. But the tendency doubly increases when both circumstances, a higher degree of *H* and diminished accuracy of vision, as is often the case, occur, combined in the same eye. If the eye has long been deviated there arises a secondary diminution of the accuracy of vision, as a result of strabismus to which I shall subsequently revert. In that case, however, we can with the aid of the ophthalmoscope, often demonstrate a still higher degre of *H* of this eye.

Spots in the cornea. It is often remarked that in oblique vision the deviated eye, or indeed, both eyes, exhibits opacity, or spots on the cornea. Pagenstecher and Saemisch have recently called attention to the frequent occurrence of corneal spots in strabismus. It does not appear to me, however, that spots on the cornea should, in themselves, be capable of exciting strabismus. Although the image of the second eye is less perfect, experience shows that even then the preference is given to bi-nocular vision; nor is it explicable that one of the eyes should be inclined to deviate, merely for the purpose of making it quite different, rather than it is true, an unequal, but still corresponding image should fall upon the yellow spot. Ruete has, upon good grounds, in this way decided the contest between Beer and Joh. Mueller. But it is quite a different question whether, where hypermetropia exists, specks on the cornea and other obscurities might not increase the tendency to strabismus, whether the less accurate image in the visual axis might not make the image less disturbing, and diminish the abhorrence of an accessory second image. I am very much inclined to assume this. At least, I find specks on the cornea much more common in hypermetropia with strabismus, than in hypermetropia without strabismus. It is true, there may be still another connection between specks on the cornea and strabismus, to which Ruete has already directed attention; namely, an inflammation which produces these specks on the cornea, may extend beneath the conjunctive to the same of the muscles or their envelopes, and produce, first, a spasmodic and afterwards a nutritive contraction. Such cases I have already above mentioned. They are, however, comparatively rare, but they may in part explain the preponderance of specks on the cornea in hypermetropia with strabismus.

In the second place, as I have remarked, the origin of strabismus is promoted by circumstances which render convergance easier. Under this head are to be noted.

Peculiar structure or innervation of the muscles; easy mobility of the eyeballs inward. Not unfrequently a congenital insufficiency of the musculi recti enterni occurs. It may readily be assumed that the opposite also may be the case; and, in fact, some eyes converge without any particular tension up to three inches, nay, up to two inches, and less from the eye. We may assume that form and position of the eye ball exercise as much influence in this respect as the structure or innervation of the muscles.

Now, while in insufficiency of movement inwards we have a guarantee against strabismus convergence, free motion in this direction will increase the tendency to this form of oblique vision. By many the latter can, in a high degree, be easily produced at will; by others, not at all, or only with great difficulty; and when it is stated that such voluntary squinting often produces for the sake of imitation, or of mockery, has with some given rise to permanent strabismus, I readily admit it, but on condition that hypermetropia at the same existed. Moreover, I have not been able to satisfy myself that a special tendency to strabismus may be hereditary. Let me be understood. In a very high degree hypermetropia is hereditary. It is a rare thing with hypermetropic structure of the eyes in one of the parents, not to find hypermetropia also in some of the children. But whether this hypermetropia in the parents was combined with strabismus or not, has, if any, certainly only slight influence in the

development of strabismus in the hypermetropic children born to them. If in a family one or two labor under strabismus convergence, we may be sure that in some other members hypermetropia will occur; but that in the same family most of the hypermetropics should be affected with strabismus, has very rarely occurred to me.

Relations between the visual line and the axes of the cornea.—We have above seen that in general in hypermetropic individuals, in order to give a parallel direction to the visual lines, a more than ordinary diversion of the visual axes is required. Thence we have in so many hypermetropic persons apparent strabismus divergence. On the other hand, we know that most eyes can with difficulty be brought to a state of divergence; a weak prism, with the refracting edge held outwards before the eye, produces double images, which most people are not able, by divergence of the visual lines, to overcome. Even for the sake of single vision, many do not succeed in diverging some degrees more. It is, therefore, natural to assume that when for single vision more than ordinary divergence of the corneal or visual axes is required, the divergence may very easily be insufficient, and that accordingly, as a matter of course, for seeing at a shorter distance also, there may readily be had great convergence. What was treated of under the first heading facilitates convergence in an absolute manner. Comparatively the relation between the visual line and the axis of the cornea has in hypermetropics the same result. Now, if in looking at a distance the requisite divergence of the axes of the cornea easily falls short the convergence will likewise, under the influence of the hypermetropia in looking at near objects be relatively too great. The condition for the development of strabismus is thus given In fact, it often seemed to me that in squinters after tenotomy, a considerable degree of divergence of the axes of the cornea was required to make the visual lines assume a parallel position; often the eyes are apparently quite properly directed, and yet when fixing a remote point, one and the other eye are alternately covered with the hand, we observe that the eye just opened has each time to make an extensive movement outwards to fix the remote point. Sometimes this is so great a degree the case that, for bi-nocular vision at a distance, a deformity by divergence would be required. This leads me to suspect that while in general the great angle *a* promotes the occurrence of strabismus, in order to test this suspicion the angle *a* was measured in ten cases of strabismus convergence. The measurements were in great part made by Mr. Hamer, according to the method already described with his usual accuracy.

The above set of reasons as to why certain hyperopes squint, while many others do not, 'ave been handed down to us in every text-book which has been written since 1857. The reasoning is truly classical, but time has to my mind demonstrated that it is not correct in many respects.

First, *congenital differences in the vision or refraction of the two eyes*, which he gives as a cause for the development of squint in hyperopes, will not stand the test of investigation. If a hyperope finds it unnecessary to squint for the purpose of producing acute vision, the existence of the above conditions will never make squint a necessity. If a hyperope is unable to see distinctly with both eyes the above-described condition in one eye will determine which eye will be the squinting one, but this condition will never occasion the developement of convergent squint in a person having facultative hyperopia. It is a question if a non-facultative hyperope with both eyes perfect will not learn to squint, if it is necessary to do so, quite as easily as the person who has one eye which is slightly defective but still has bi-nocular vision.

Spots on the cornea in persons having bi-nocular vision are very seldom, if ever, a cause for the development of convergent squint. We find so many persons having non-facultative hyperopia with spots on the cornea who do not squint that this position becomes a difficult one to defend.

Peculiar structure or innervation of the muscles has also failed to hold its ground as a cause of strabismus.

Donder's measurements regarding the relations between the visual lines and the axes of the cornea have failed to receive support from others who have experimented with these measurements, since they have not found any special relations between the angle *a* and convergent strabismus. Landolt, in his last book, follows all the reasoning of Donders, and adopts most of the reasonings as established facts. He quotes Mauthner as saying, "*That if all hyperopes do not squint it is because only a small number know how to perform the act* (Mauthner Die Optischen Fehen des Auges, p. 557)." Mauthner really says, "That every hyperope who cannot see without squinting but who could see by squinting would look cross-eyed if he knew how to do so" Landolt finishes by saying that none of the enumerated theories explain all the cases of convergent squint, and he prefers to acknowledge that many cases of convergent squint are beyond our comprehension. I think the explanation of Mauthner is full and complete, and accounts for every case I ever met with where convergent squint is resorted to for producing acute vision.

Convergent strabismus is a "trick," by which difficulties in the relations between fixation and accommodation can be overcome; all persons having use for this "trick" will use it, providing they can learn how.

We will take up in our next the treatment of convergent squint resulting from hyperopia and other forms of ocular deviations.

School of Optics.—The class commencing October 10 consists of the following members: Albert A. White, Amesbury, Mass.; Frederick A. Peel, London, Ont.; James W. Chappel, Fredericksburg, Va.; Harry Price, Little Falls, N. Y.; Sidney Smith, Pine Bluff, Ark A class will probably form about October 15. Those desiring to join should apply early.

The New York Institute for Eye and Ear Diseases was last month opened at 208 W. 42d St., New York, the following gentlemen being the incorporators who formed themselves into the board of trustees: David Stevenson, President Mutual Bank; J. L. Campbell, M. D., New York Orphan Asylum; James E. Spencer and John Spencer, President and Treasurer respectively of the Spencer Optical Mfg. Co.; Samuel McMillan, Vice-President Mutual Bank; Charles E. Simmons, M. D., Commissioner Charities and Corrections; Rob. A. Graecen; C. J. Dumond, M. D.; Henry Hanson; J. S. McWilliam, Attorney; Alvin D. Higgins, Supt. E. S. Higgins & Co., Carpet Factory; W. C. Campbell, M. D., N. Y. Orphan Asylum; George P. Shirmer, M. D.; L. A. da Cunha; C. L. Patton, President University Publishing Co.; John R. Van Wormer, Supt. Lincoln Safe Deposit Co; Rudolph Aronson, President New York Concert Co.

This Institute contains departments for treating diseases of the eye, ear, nose and throat, and has beds for the accommodation of twelve patients and private rooms where all classes may enjoy the comforts of a home. Particular attention is given to the care and treatment of the aged blind and a dispensary has been opened in connection with the institute for the treatment of the poor. The institute adjoins Dr. Chas. A. Bucklin's School of Optics at 206, and Dr. Bucklin having been appointed executive surgeon in charge it will afford ample material for illustrating the course of instruction given in the school. Any information in regard to the institute will be cheerfully furnished by Dr. Bucklin.

A Marvel.—There is in Turin a tiny boat formed of a single pearl, which form it assumes in swell and concavity. Its sail is of beaten gold, studded with diamonds, and the binnacle light at its prow is a perfect ruby. An emerald serves as its rudder, and it stands on a slab of ivory. It weighs less than half an ounce; its price is $5,000.

Gem Production in the United States During 1888.

BY GEORGE F. KUNZ.

[From "Mineral Resources of the United States," in the Report of the U. S. Geological Survey for 1888. Published at Washington, 1890.

NO SYSTEMATIC mining for precious stones was carried on during 1888, although two small crystals of emerald, valued at about $100, were found at the mines at Stony Point, Alexander County, North Carolina.

Diamonds.—Considerable excitement prevailed during the spring at Morris station, 13 miles south of Atlanta, Georgia, where the diamond described on page 558 of Mineral Resources for 1887 was found; and much was said at the time as to the resemblance of this locality to that of other diamond-producing districts; but no further discoveries have been reported, although there was every reason to believe, from the statement of the local newspapers, that extensive working would be carried on. During the summer of 1888 a small elongated hexoctahedral crystal of diamond, weighing seven-sixteenths of a carat, was reported to have been found by Mr. C. O. Helm on the farm of Mr. Henry Burris, about 300 yards from the Cabin Fort creek, Russel County, near Adair County, Kentucky. While walking through an old field, Mr. Helm observed a small bright stone in the gravel. On investigation it proved to be a diamond, octahedral in form, with curved faces, lustrous, but slightly off color. The rock in the vicinity is said to be composed of granite dikes, slates and quartz, feldspar, magnetic iron ore, flint, garnets, etc., scattered through hills of clay.

Beryl, phenacite and topaz.—During the summer of 1888 prospecting was carried on near the top of Mount Antero, Colorado, at an altitude from 12,000 to 14,000 feet above the level of the sea, and several pockets of crystals of blue beryl and phenacite were found. The blue beryls resembled those from Mourne Mountain, Ireland, except that they were very curiously etched and partly eaten out. From the crystals, perhaps a hundred in number, material was obtained which furnished cut gems weighing from 1 to 12 carats. They were of good blue color, although often containing the characteristic beryl striations. The crystals and gems together brought about $600 or $700. The phenacites were found implanted on quartz and beryl, and crystals valued at more than $500 were obtained, although none of them were suitable for cutting. On January 12, 1888, near Little Robinet's store and Little River church, in the vicinity of Russel Gap road, Alexander County, North Carolina, a farmer, while plowing, found a crystal of dark, sea-green beryl, weighing 28 ounces, parts of which would furnish gems weighing from 1 to 20 carats each. This beryl resembles that variety found at the Stony Point emerald mine, 10 miles distant, and at the Miller farm, 12 miles distant, and also that found in Alexander County. This stone would furnish larger gems than any previously found in North Carolina. During May, 1887, Mr. E. D. Andrews discovered a deposit of crystals of topaz and phenacite on Bald Mountain, North Chatham, New Hampshire. The crystals were transparent, light blue, and sherry colored, the larger specimens measuring over 2 inches in length. None of the phenacites were more than half an inch in diameter, and all were very primitive in habit. The find was worth about $700.

Garnet.—During the past year considerable attention has been paid to the gathering of the blood-red garnets, the so-called "Arizona and New Mexico rubies." The Navajo Indians have collected and sent from their reservation several hundred pounds of these, among which are some fine gems. Three splendid ones were valued at $75, $50, and $35, respectively. Some of these garnets are believed to have been pounded from what is evidently a peridotite rock. This theory requires verification, as no Government survey has been made of the locality. Of the variety of spessartite garnet found in the Allen mica mines at Amelia Court House, Virginia, mentioned in Mineral Resources for 1887, page 459, a number of irregular masses with a crystalline exterior were obtained, which on cutting furnished fine gems very similar in color and lustre to the essonite or hyacinth of Ceylon. The cut stones varied from 1 to 100 carats in weight.

Epidote.—Specimens of epidote in brilliant crystals, 1 inch in length and one-half inch in diameter, apparently dark or black, but perfectly transparent, showing a deep grass-green and brownish yellow when viewed in different directions, have been found by Rev. C. D. Smith, 1 mile from Rabun Gap, Rabun County, Georgia. They occur in simple crystals and twins, identical in habit with those from Unter Sulzbacthal, Tyrol. They were found in veins of pink granite rock on the south slope of the Blue Ridge mountains. The locality promises to afford crystals as fine as the famous Tyrolese gems, although the size may be smaller.

Agatized wood.—Large quantities of the agatized and jasperized wood from Arizona, for which the name "shinarump" (the name used by the Indians) has been suggested as appropriate by Maj. J. W. Powell, have been taken from the locality, and have been cut into sections and polished for table tops, tiles, and for other ornamental purposes. Some of these have been prepared for exhibition at the Paris exposition. One monster stump, weighing $2\frac{1}{10}$ tons, was sent to New York City, and when polished had a surface of $40\frac{1}{2}$ by 36 inches—as large a polished surface of so hard a substance as is known.

Fire opal.—A specimen of fire opal, $1\frac{1}{2}$ 1 by $\frac{1}{2}$ inch, evidently a water-worn fragment, was found near John Davis river, in Crook County, Oregon. It is transparent, grayish white in color, with red, green, and yellow flames. The play in colors equals in beauty that of any Mexican material, and it is the first opal found in the United States that exhibits color. Undoubtedly better material exists in the locality where this was found.

Dumortierite.—About the same time that Messrs. Riggs & Diller found that the blue mineral supposed to be indicolite was identical with dumortierite in Harlem, New York, masses of quartz was discovered in Yuma County, Arizona, heavily impregnated with dumortierite and of an indigo-blue color, and which when polished resembled the blue lapis lazuli, and would serve the same purpose in jewelry, as the quartz is harder than lapis lazuli.

Tourmaline.—Among some very interesting minerals found by C. E. Beecher and S. A. Robinson, at Newcomb, Essex County, New York, were some remarkable specimens of brown tourmaline. The crystals, although not so fine as those from Governeur, New York, were frequently sufficiently transparent to offer material for at least one hundred gems, weighing from 1 to 10 carats. They varied from golden brown to topaz-yellow in color.

Rhodonite.—This mineral, which has been known to occur in bowlders near Cummington, Massachusetts, has been traced to the ledge. Fine masses, weighing several hundred pounds, have been blasted out, and efforts will be made during the coming year to introduce this as an ornamental stone, it being as beautiful as the Siberian variety, which is so extensively used for table-tops, mantelpieces, paper-weights, etc., in Russia.

Turquois.—Considerable mining of a desultory character has been carried on at the turquois mines near Cerrillos, New Mexico, by the Indians and hunters, who obtained the turquoise in a primitive manner by building fires against the wall rock and then cracking off large masses by throwing water on it. This method, however, invariably destroys the color. Some of the material sent from this locality during the past year was in form of thin veins entirely free from rock. In color it was almost equal to the poorer Persian material, and should find a ready use as an ornament or decorative stone. The recent releasing of the property is likely to prevent the existing method of working the locality. A new deposit of turquois was opened during the year in the Holy Cross mining district, 30 miles from Leadville, Colorado, which is very similar to the variety from

Arizona and New Mexico, the color being, if anything, a better blue. At this locality there was no evidence of prehistoric mining. Until recently the impression in the vicinity was that the turquois was an ore of copper.

Gadolinite.—This stone admits of a high polish, and is of a deep velvet-black color. During the last year large quantities of it were obtained near Bluffton, in Llano County, Texas, 22 miles from Bunnet. The occurrence of this gadolinite was somewhat similar to that of allanite in Amherst County, Virginia. It has more than ordinary interest from the fact that it contains from 40 to 50 per cent. of yttria. About 1,000 pounds were found in a single pocket, associated with xenotime, fergusonite, and euxenite. One crystal weighed 11 pounds, another 13 pounds, and a single group weighing 40 pounds was obtained. The productions of this locality exceeded in quality and size anything yet obtained.

Fluorite.—About four years ago a small vein of fluorite was discovered in the Archaen limestones in the town of Macomb, Saint Lawrence County, New York. It was worked irregularly from time to time until last summer, when the vein suddenly widened, breaking through into an opening or cavity 22 feet in length, and varying in width from 8 to 18 feet. The top, bottom, and sides were lined with a magnificent sheet of crystals, varying from 1 to 6 inches in diameter, and each in turn forming part of larger composite crystals. Between the floor and the walls was a layer of partly decomposed calcite, which was readily removed, so that groups of crystals weighing from 10 to several hundred pounds each, and one of them measuring 2 by 3 feet was easily detached. The cavity contained at least 15 tons of fluorite. The habit of the crystals is, in nearly every instance, that of the single cube, but slightly developed faces of the octahedron are often present. Almost all the crystals have on the surface a small, botryoidal elevation, an even coating of brown acid. The crystals are well colored, but the surfaces are dull. The fluorite is of a uniform light sea-green color, except where it is attached to the gangue, or at the junction of the crystals. Here there are small spots of rich emerald-green from 1 to 2 inches in diameter. This find is strikingly like that of the famous Muscallonge lake localities of forty years ago, except that the crystals are of a finer color and occur in larger groups. The occurrence of a second deposit in this county leads the hope that fluorite may exist here in commercial quantity available for the arts.

Amber.—For the last fifteen or twenty years travelers have occasionally brought specimens of a remarkable amber from some locality in southern Mexico. The information that has been gained concerning it has been brought to the coast by natives, who say that it occurs in the interior so plentifully as to be used by them for making fires. The color of this amber is a rich golden yellow, and when viewed in different positions its exhibits a remarkable fluorescence, similar to that of uranine when dissolved in water, which it also resembles in color. A specimen now in the possession of Mr. M. T. Lynde, of Brooklyn, New York, measures 4 by 3 by 2 inches, is perfectly transparent, and is even more beautiful than the famous so-called opalascent or green amber found in Catania, Sicily. This material would be extremely valuable for use in the arts. It is believed that an expedition has started for the locality in the interior where it is found.

New developments in foreign localities.—The Burmese ruby mines were leased to a powerful London syndicate in November, and machinery was immediately sent to Mandelay, Burmah, for the purpose of prospecting and working the mines. From all appearances active explorations will take place during 1889, and within a short time it will be definitely known whether or not these mines are exhausted

Estimated production of precions stones in the United States from 1884 to 1888.

Species.	1884.			1885.			1886.			1887.			1888.		
	Value of stones found and sold as specimens and curiosities, occasionally polished to beautify or show structure.	Value of stones found and sold to be cut into gems.	Total.	Value of stones found and sold as specimens and curiosities, occasionally polished to beautify or show structure.	Value of stones found and sold to be cut into gems.	Total.	Value of stones found and sold as specimens and curiosities, occasionally polished to beautify or show structure.	Value of stones found and sold to be cut into gems.	Total.	Value of stones found and sold as specimens and curiosities, occasionally polished to beautify or show structure.	Value of stones found and sold to be cut into gems.	Total.	Value of stones found and sold as specimens and curiosities, occasionally polished to beautify or show structure.	Value of stones found and sold to be cut into gems.	Total.
Diamond	.....	$800	$800	.....	.....	.....	.....	$60	$60	.....	.....	.....	.....	.....	.....
Sapphire gems	$250	1,500	1,750	.....	$500	$500	$250	500	750	.....	$500	$500	.....	$500	$500
Chrysoberyl	25	.....	25	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Topaz	200	300	500	$1,000	250	1,250	1,000	.....	1,000	$1,500	500	2,000	$500	100	600
Beryl	300	400	700	250	500	750	.....	5,500	5,500	500	3,000	3,500	300	500	800
Phenacite	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	650	.....	650
Emerald	.....	.....	.....	3,000	200	3,200	3,000	200	3,200	.....	.....	.....	100	.....	100
Hiddenite	.....	.....	.....	500	2,000	2,500	3,500	1,000	4,500	....	.....	.....	.....	.....	.....
Tourmaline	1,500	500	2,000	500	100	600	3,500	2,000	5,500	300	200	500	.....	.....	.....
Smoky quartz	2,000	10,000	12,000	2 000	5,000	7,000	2,000	5,000	7,000	1,500	3,000	4,500	1,000	3.000	4,000
Quartz	10,000	1,500	11,500	10,000	1,500	11,500	10,000	1,500	11,500	10,000	1,500	11,500	10,000	1,150	11,150
Silicified wood	10,000	500	10,500	5,000	1,500	6,500	500	1,000	1,500	35,000	1,000	36,000	1 000	15,000	16,000
Garnet	1,000	3,000	4,000	200	2,500	2,700	1,250	2,000	3,250	2,500	1,000	3,500	2,000	1,500	3,500
Anthracite	.....	2,500	2,500	.....	2,500	2,500	.... ..	2,500	2 500	2,000	.....	2,000	1,500	.....	1,500
Pyrite	2,000	1,000	3,000	1,500	500	2,000	1,500	500	2.000	2,000	500	2,500	2,000	500	2,500
Amazonstone	2,500	250	2.750	2,500	250	2,750	2,000	250	2.250	1,500	200	1,700	1,500	200	1,700
Catlinite (pipestone)	10,000	.....	10,000	10,000	.....	10,000	10,000	.....	10,000	5,000	.....	5,000	5,000	.....	5,000
Arrow points	1,000	.....	1,000	..... .	2,500	2,500	.....	2,500	2,500	.....	1,500	1,500	1,500	.....	1,500
Trilobites	500	.....	500	.....	1,000	1,000	1,000	.....	1,000	500	.....	500	500	.....	500
Sagenitic rutile	500	500	1,000	.....	250	250	1.750	.....	1,750	.....	.....	.....	.....	.....	.....
Hornblende in quartz	500	100	600	.....	300	300	200	.....	200	.....	100	100	.....	.....	.....
Thompsonite	250	500	750	250	500	750	100	300	400	250	500	750	300	200	500
Diopside	.....	.....	.....	100	.....	100	.....	.....	.....	50	.....	50	.....	.....	.....
Agate	4,000	500	4,500	1,000	1,000	2,000	1,000	1,000	2 000	3,000	1,000	4.000	3,000	1,000	4,000
Chlorastrolite	500	1,000	1,500	.....	.....	.....	500	500	1,000	300	500	800	300	500	800
Turquois	1,500	500	2,000	1,500	2,000	3,500	1,000	2,000	3,000	1,000	1,500	2,500	1,500	1,500	3,000
Moss agate	1,000	2,000	3,000	500	2,000	2,500	1,000	1,000	2,000	200	750	950	200	750	950
Amethyst	2,000	250	2,250	2 000	100	2,100	2,000	100	2.100	2,000	100	2,100	2,200	300	2,500
Jasper	2,000	500	2,500	.....	.....	.....	.....	.....	.....	.... .	.....	.....	100	.....	100
Sunstone	250	200	450	250	100	350	200	100	300	50	100	150	.....	.....	.....
Fossil coral	500	250	750	.....	.....	.... ..	1,000	.....	1,000	1,500	500	2,000	2,500	500	3,000
Rutile	.....	.....	.....	750	.....	750	750	.....	750	.....	.....	.....	.....	.....	.....
Total	54,275	28,550	82.825	39 300	30,550	69,850	49,000	29,510	78,510	70,650	17,950	88,600	37,650	27,200	64,850
Gold quartz	40,000	100,000	140,000	40,000	100,080	140,00	.....	.....	40,000	.....	...	75,000	.....	.....	75,000

TRAINING SCHOOLS FOR JEWELERS.

THE PARIS SCHOOL FOR APPRENTICES IN JEWELRY—ITS HISTORY AND METHODS.

PART II.

ALTHOUGH the Parisian Jewelers' Art School is far from being organized and managed as it might be, it has always given very good results, and without it French jewelers would not have been able to produce the numerous beautiful pieces they have brought out during the past twenty years.

It is all very well to say that when a young fellow is born an artist he is bound to find, in course of time, the way to turn his natural talent to account. First of all, the special bent is not always of so decided, so imperious a character that the little fellow cannot help obeying it. This is only the case with a few, whom the irresistible impulse of genius will, in the various arts, carry up above the common flock, will they or nill they. Besides these superiorly gifted beings there are a great many endowed with less decided natural taste who never will try to make use of it, unless they are encouraged to do so, and, consequently for them, an outward impulse must prompt the inward one. They must be taken by the hand, so to speak, made to follow a proper course of training, and there is every reason to believe that the results will be most satisfactory. If these young fellows are apprentices to a trade, their artistic education ought evidently to receive a special direction. Yet, this must not be done in a narrow way, simply calculated to make of them skilful artisans of a medium cast. They ought to be taught the principles of the great art, so as to be able to understand what is really beautiful in every branch of the fine arts, and to become capable of seeing Nature as superior artists see it. These principles, if well rooted in their minds, will allow them to extend the limits of their own sphere whenever it will be necessary

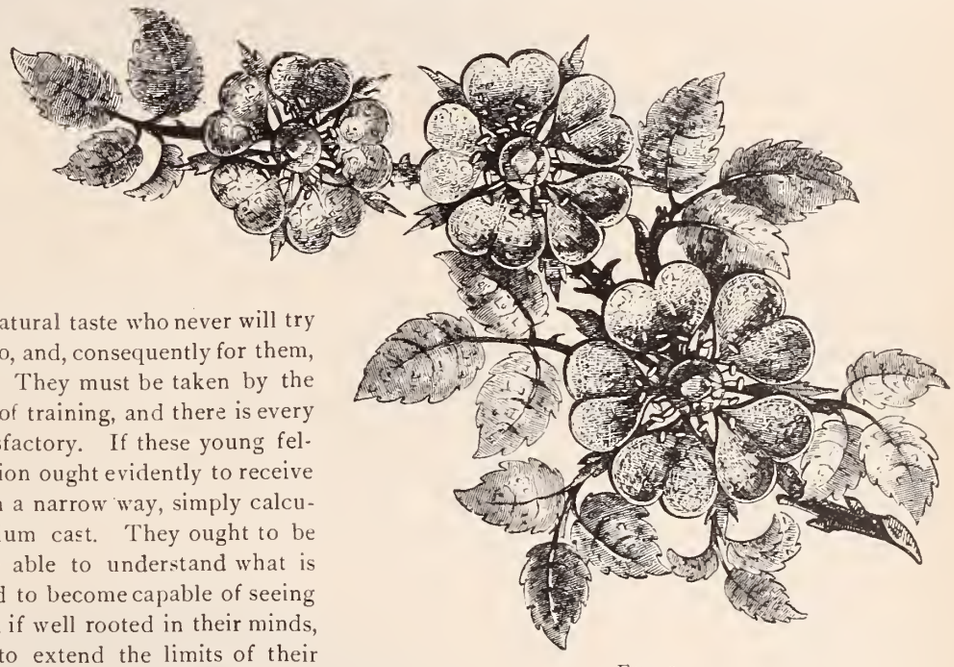


FIG. 1.



FIG. 2.

If to learn drawing of all descriptions is the first requisite for jewelers and workers of precious metals to allow them to make a design well delineated and showing perfect proportions, modelling is no less indispensable to them, since they will have to make works of various reliefs. Therefore, they must be trained to reproduce with clay and wax the most delicate curves of a leaf or a flower, as well as the correct expression of features suitable to faces belonging to well-known types. They must, besides, have a clear, if only a general idea of the structure of human and animal bodies, since they may have to reproduce, in a small size, but accurately, a great many types of a range almost unlimited, if fancy be allowed (as it really is) to extend in that line the bounds of Nature's kingdom.

Not only does the Jewelers' Art School give to its pupils sound notions of drawing and modelling, which prepare them to become proficient artisans, but in developing their taste, it makes them take pleasure in their work. They soon become convinced, through this teaching, that it is connected with everything beautiful and pleasant on earth.

If we consider that from the very moment they become pupils of our evening school, all their time is spent either in learning art or in applying it to their trade, we see at once what valuable results these young fellows are bound to obtain. Unless they happen to be afflicted with a blunt mind or are decidedly unwilling to learn, as soon as they have gone beyond the tedious first lessons, they take by degrees a lively interest in what they are doing. They come to their workshop in a happy mood, ceasing to look upon it as a place of drudgery, to which they are driven by the necessity of earning a scanty living. The boys soon feel conscious of creative power lurking in them which they must bring into action. Deeply impregnated with the artistic air which they breathe during the week, they get so accustomed to see everything through it, that even as they go listlessly on their Sunday walks the little fellows look instinctively at all things as models to be copied or avoided, admired or criticised. Art's happy worshippers, they find everywhere invigorating food for their faith.



FIG. 3.

That constant and irresistible tendency of all their energies towards one end brings, in course of time, most remarkable results, and, if we look further, we can foretell that the children of these refined artisans, being imbued from their very infancy with artistic notions which grow with them, will easily become proficient in any branch of art they may choose. If this culture were tried on an extensive scale in any one nation, it would, undoubtedly carry that nation far above the others, causing her to produce works which might rival the most perfect legacies of time.

After stating that the brilliant results obtained in France during the last twenty years in the *joaillerie-bijouterie* line are due to the

thorough teaching given our apprentices, it is but fair to remark that most members of the Jewelers' Chambre Syndicale have, from the beginning, taken a lively interest in the success of their art school. They clearly understood that they would benefit by it, and, in consequence, gave every attention to the undertaking. Among those who had the largest share in the good management of the school, we may mention Fontenay, who died about two years ago, Martial Bernard, Falize, and, above all, Massin, a man of genius in the jewelry trade, about whose career a few words should be said. Several of the best known jewelers of Paris were indebted to him for their success in the Exhibitions of 1878 and 1889. Not only does Massin reproduce to a nicety with precious stones, the most delicate among the flowers and the lightest of winged beings, always obtaining the right curve and never omitting the slightest detail of their structure, but he is also quite at home in the kingdom of fancy. As much a poet as he is an artist-jeweler, he powerfully appeals to imagination in many of his inimitable works. The superiority of his workmanship and the refinement of his style are such that all articles made by him or under his direction can be detected at a glance. Quick to conceive, he is careful almost to a fault in execution. But what is still more to be admired in him is that he generally obtains with small means the greatest sum of effect, and in making a masterpiece in jewelry does not spend, as a rule, half the quantity or value in stones which another Parisian jeweler would require to bring out an indifferent effect.

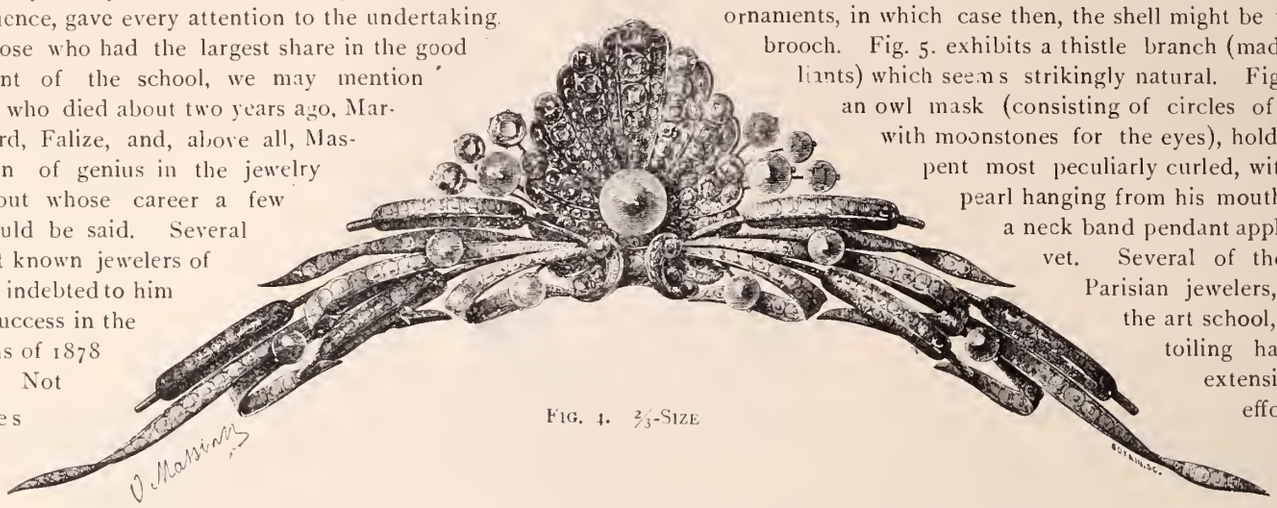


Fig. 4. ⅔-Size

To show the influence such a man must have had on the pupils of our art school during more than twenty years, it is necessary to place before the reader a few of his past works, giving a faint notion of what his creative power has been.

Fig. 1 shows a sweet-brier branch of diamond (the flowers mounted with silver and the leaves with pale green gold); an ornament for the corsage or the hair.

Fig. 2 is a *briolette* pendant in the Louis XIV. style, belonging to M. Coster. It is made of chased gold and diamonds.

Fig. 3 is a scarabæus consisting of sapphires and brilliants, with a pearl caught by the insect's horns. It is meant to be worn as a locket.

Fig. 4 shows a diadem made of diamond reeds with, a shell of the same stones rising in the center. The mounting is in silver and gold, and the whole effect is enhanced by the addition of pearls. The two clusters of reeds, if detached, would make pretty shoulder ornaments, in which case then, the shell might be worn as a brooch. Fig. 5. exhibits a thistle branch (made of brilliants) which seems strikingly natural. Fig. 6 shows an owl mask (consisting of circles of brilliants, with moonstones for the eyes), holding a serpent most peculiarly curled, with a black pearl hanging from his mouth. This is a neck band pendant applied on velvet. Several of the younger Parisian jewelers, pupils of the art school, have been toiling hard in this extensive field of effort, and have lately obtained some interesting results. At the annual distribution of prizes, the President of the Chambre Syndicale never fails to mention the names of the jewelers and silversmiths who owe a great part of their success to the good teaching they have received in the drawing and modelling school. This is always sure to have a salutary influence over the minds of all the young pupils assembled on that occasion in the *Grand Amphithéatre des Arts et Métiers*.

For various reasons it seems unnecessary to show copies of drawings, or of pieces in clay or wax made by advanced pupils of the school. Although they are very remarkable from a certain point of view, they do not exhibit striking originality, and cannot reasonably be expected to. They merely prove that these young men have learned well what they have been taught, and are able to give, in the jewelry or silver line, a well finished form to any creation of their fancy. It will be sufficient if we reproduce the piece that won the first prize for modelling at the last competition. Evidently the young man who modelled this cup will be some day a prominent artist. The ensemble is very elegant, and the figures are of easy and graceful rendering.

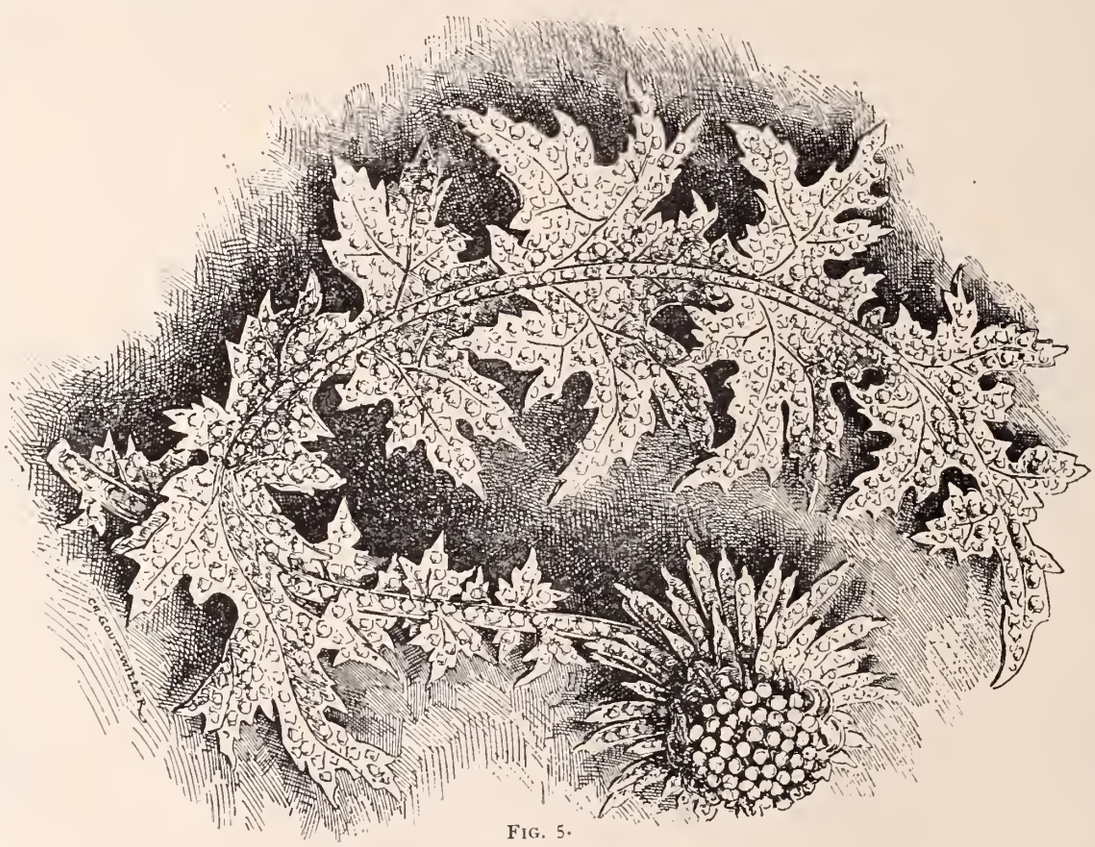


Fig. 5.

It would be interesting to follow, with the help of illustrations, the various stages of improvement of a good pupil. But the object which the author of this article had in view was simply to show how the Parisian Jewelers' Art School has been managed from its opening to the present time, and to give a clear idea of the results obtained. He hopes that this brief survey has been sufficient to prove that learning art is as indispensable to a jeweler or a silversmith

as it is to a painter or a sculptor. If the teaching is really strikingly different, the general principles are exactly the same in both arts

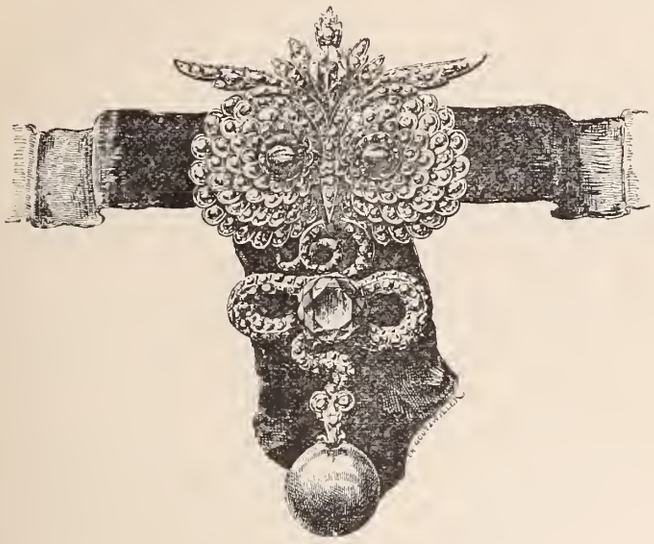


FIG. 6.

Let those who will not see this self-evident truth be condemned to lasting mediocrity. They are standing in their own light and competitors who do see the importance of the art side of the jewelry



PRIZE MODEL, LAST COMPETITION.

and silverware trades will outdistance them in the race for honors. The Parisian Jewelers' Art School stands as a glorious monument to this great truth.

The Art of Enameling.

(*Continued from page 77, September, 1890.*)

CONCLUSION.

WE SAW in the last installment of this article that frit No. 1, in English enameling, is composed of red lead 10 parts, flint glass 6 parts, saltpeter 2 parts, and borax 2 parts. Fuse this mixture well in a crucible for some time, then pour it out into a jar of water, collect the residue, and afterward reduce it to a powder in an agate-ware mortar and preserve for future use.

Frit No. 2.—Metallic tin,..8 parts;
Metallic lead,..2 parts.

Fuse this composition in a iron ladle at a dull red heat; carefully remove the oxide which will form upon the surface, taking care also to obtain it quite free from the pieces of metal which have escaped oxidation, and reduce as before to a fine powder. Then take of this, calcine 4 parts, silica 8 parts, saltpeter 2 parts, common salt 2 parts. Well mix and partly fuse in a clay crucible; the fewer number of times this is fired the firmer it will be.

Frit No. 3.—Broken crystal goblets..12 parts.
Calcined borax..... 4 parts.
Glass of antimony..... 2 parts.
Saltpeter..... 1 part.

Melt this mixture after the manner recommended for No. 1. Break up and again melt, as the flux improves by repeated melting. The above enamel fluxes are admirably adapted to form the basis of enamels for gold-work. They may be made more fusible by increasing the proportion of borax; and by the latter substance the fusibility of all enamels may be increased at pleasure; but too free a use of it is an obstacle to the work of the artist.

Frit No. 4.—Flint glass, powdered..16 parts.
Pearl ash..... 6 parts.
Common salt..... 2 parts.
Calcined borax..... 1 part.

Let the ingredients be well melted together, and afterward finely broken into powder; and preserved ready for the additional coloring mixture of enamel.

Frit No. 5.—Silicious sand....12 parts.
Calcined borax...12 parts.
Glass of antimony 4 parts.
Saltpeter..... 1 part.
Chalk ..... 2 parts.

Mix and fuse as before explained; grind into very fine powder and re-melt; this operation may be judiciously repeated several times.

We have only so far described enamels, and given directions for the bases of them; variety of design in color is produced by the addition of some metallic oxide, which effects the change according to the kind employed. These oxides should be used as sparingly as possible. because some of them will not stand the chemical process of coloring or even boiling without a bloom coming over them. A good black enamel may be made by taking the following ingredients:

BLACK ENAMEL.

Frit No. 5.....14 parts.
Peroxide of Manganese 2 parts.
Fine Saxony Cobalt. .1 part.

BLUE ENAMEL.

Frit No. 4.....24 parts.
Fine Saxony Cobalt... 5 parts.
Saltpeter ..... 1 part.

RED OR CRIMSON ENAMEL.

Frit No. 3.....8 parts.
Purple of Cassius, or...1 part.
Red Oxide of Copper..1 part.

WHITE ENAMEL.

Oxide No. 2.....1 part.
Fine Crystal.....2 parts.
Peroxide of Manganese $\frac{1}{16}$ part.

GREEN ENAMEL.

Frit or Flux No. 1....36 parts.
Oxide of Copper..... 2 parts.
Red Oxide of Iron. . $\frac{1}{10}$ part.

YELLOW ENAMEL.

White Lead.....2 parts.
White Oxide of Antimony 1 "
Sal-Ammoniac .....1 part.
Alum.....1 part.

For the last mentioned, pound each of the ingredients separately in a mortar and well mix together; then carefully submit them to a heat sufficient to decompose the sal-ammoniac (chloride of ammonia); this color can be tested in the melting and will do when the yellow is properly brought out.

Enamel may be made deeper in color by a further addition of oxide than that given for producing the respective tints. For instance, if a very intense blue is required add half a part of zaffre to the other ingredients. For black, the same protoxide of iron, zaffre or black oxide of copper; but the latter is not so good as the others. For red, the red oxide of copper may be employed; and in yellow, the oxide of lead must be used. For green, the protoxide of iron and oxide of chromium may be sparingly added to the transparent flux.

GENERAL REMARKS.

Enamel may be prepared and kept ready for use by grinding them in an agate mortar, and then placing them under water in a covered vessel. Or if preferred they may be preserved until required, in the lump, as they are formed after the crucible operation; if the last mentioned plan is adopted, then they must be broken with a rather sharp-faced hammer, and pulverized by means of the previously mentioned pestle and mortar. When this has been done, they are washed in clean water until all extraneous matter has entirely disappeared.

The work which has to receive enamel must be specially prepared. This is done in the following manner:—The pattern desired is first drawn on the work by the graver, the ground work or part to receive the enamel is cut down very evenly and this helps to heighten the effect; in the case of transparent enamels, the ground work should be extremely smooth and bright. After the work has been well cleaned by washing in a hot solution of soda, soap and water and dried, the enamel is applied. In very delicate cases the point of a pen is used for this purpose in others a knife or spatula may be substituted with advantage; the work is then fired and the enamel is laid on as many times as is required.

When the enamel is sufficiently fused the surplus part is rubbed off, the article is rinsed and again fired in order to close the pores. Great judgment is required with regard to this operation, as too long an exposure to the heat of the furnaces would completely ruin the entire work. Different shades of color require different degrees of heat, and a knowledge of this can be acquired only by continual practice; such knowledge, however, is of the highest importance, because in some of the lower qualities of gold, the fusing point of the enamel is so near that of the gold that there is great danger of fusing the one along with the other. As we have said before, when the workman finds himself beset with these difficulties, a small addition of borax to the enamel will remove these defects in the operation.

Opaque colors require a slower and longer continued heat than transparent ones, because the base generally contains lead, tin or antimony. In transparent colors a sharp quick heat is most suitable, which must be proportioned to the extent of brilliancy required. Opaqueness may be given to black enamel by heating the work to a dull red after it has passed through the usual process of cleaning; the oxide which forms upon the surface being black imparts a kind of darkness to the color.

In the case of transparent enamels, the ground work must be clean, smooth and quite bright; the grooved surface being commonly run over with a polished, half-round scorper, to make the effect more intense and beautiful, the latter quality depending to a considerable extent upon this being properly performed

By varying the alloys of gold, a great alteration may be made in the brilliancy of enamel; for example in transparent yellow and green, the alloy of gold should be rather pale; in the case of red, the reverse should be the case.

The vertical lapidary's wheel is now much used by the artificer for the purpose of removing the surplus enamel; and by the application of wet emery it is rendered clear and smooth; this is much quicker and better than the old method. It is finished upon the buff by an application of putty-powder (oxide of tin), as it is both smoother and cuts faster than most other polishing mixtures. In England enameling is a separate and distinct craft, and is altogether an art in itself; it has never, been found to answer well where tried by ordinary manufacturing goldsmiths, the designs and colors having in their hands too much of sameness when compared with those produced by the professional enameler. The enameler, to take high rank in the order must have some knowlege of designing, engraving, and chemistry; he must likewise understand the alloys of gold and their points of fusion, and the effects of coloring the work; he must also be tolerably conversant with the nature of the workmanship that is continually coming under his charge; and all this knowledge may be considered quite sufficient to raise the art to a distinct branch of study and practice.

In closing our remarks on the preparation of enamels, colors, and fluxes, and their mode of application to gold alloys, we desire to say that the rules or directions here given have been selected from very high authorities in the trade, and we trust they will be found equally serviceable to those desirous of gaining information concerning enamels and the art of enameling. The exact work cannot well be described, and thorough success is to be achieved only by the exercise of good taste, and by long-continued practice and attention to the craft.

Where diamonds and other precious stones are employed as well as enamels, work pertaining to the latter is performed first. Engraving, chasing, coloring and lapping, are subsequent processes of the goldsmiths' art.

Three Months' Patents, Jan.—March, 1890.

The total number of patents, design patents and trademarks pertaining to the jewelry, watch and kindred trades granted during the first quarter of the present year was 109, of which 82 were for construction inventions, 20 for designs and 7 for trademarks. This shows a falling off of over 20 per cent. from the number granted during the preceding quarter.

DESIGNS.

Jewelry.	Silve ware.	Tools.	Watch Cases
5	12	1	2

TRADE MARKS.

Jewelry.	Watches.	Watch Cases.
2	4	1

PATENTS.

Apparatus and Machines.	Tools.	Optical	Jewelry.	Silverware.
4	7	10	21	4

Clocks.	Watches.	Watch Cases.	Horological.
12	8	11	5

ANOTHER MESTIMONIAL.

"Is marriage a failure?"

"Yes," replied Annette, as she gazed proudly at her ring finger, "it is so far as Belle Filkins is concerned.—*Life.*



New Use for Diamonds.—The use of diamonds as sights for firearms has recently been patented in England. The diamonds are fixed in the front and back sights, and it is said enable the user to take a quick and correct aim, even in a bad light. The brilliants are so fitted that as soon as the piece is brought to the shoulder the ray in the gems assist the alignment, and the eye takes aim without the least hesitation.

Good Advice.—A contemporary advises engravers to keep a scrap-book, in which to paste all kinds of odds and ends found in the advertisements. But little time or labor is needed for such a work. Many a good job has been lost for the lack of it, many an hour wasted in what has proved a vain search after a drawing of some needed device, the design of which had been forgotten, but which had a scrap-book been in use, could easily have been obtained.

Obituary.—A well-known Swiss watchmaker of great esteem, Sylvan Mairet, died at his residence, at Montmirail, Switzerland, on July 12, in the 85th year of his age. He was borne at Locle, in 1805, and studied horology under a then very skillful watchmaker, F. L. Favre-Buelle, and subsequently, from 1831–1834, visited London. By assiduous application he became a very noted watchmaker, exhibited his products at all expositions, from the London Exposition of 1851 forward, and was several times selected to serve as an international juror.

Aluminum.—The derivation of the word aluminum is perhaps but little known, and was accidentally discovered by the writer in an old German volume, being a translation of the works of Isidovus, a writer of the seventh century. Alum, in Latin *alumen*, was extensively used by the ancients for mordanting wool, to render it susceptible of absorbing the dye of the bath. The writer says: A mordant is extensively used, called alumen, a corruption of *a lumine*, that is, "of the light which it imparts to the dyestuffs for which it is used," etc.

Gold in Artificial Gems.—A great deal of gold and its salts are at present employed in the making of artificial gems. In the artificial topaz, one grain of gold in 1,000, with 30 or 40 grains of antimony glass have been found. In the best specimens of the fictitious ruby we have a similar mixture, but the yellow is changed to red by re-melting in the oxidizing flame of the blow-pipe. In the artificial amethyst and the Syrian garnet there is either the purple of Cassius with oxide of cobalt, or fulminating gold with antimony. The perfection of some of these fictitious gems is such as to deceive many. The great cruical test for gems, their hardness, can, however, soon decide between the genuine stone and the most perfect imitation, which is after all nothing but colored glass.

Rock Crystal.—To find rock crystal is one of the chief industries of certain cantons in Switzerland. "This, together with hunting," says Saussure, "was the only occupation of the peasants of the Valley of the Chamounix." In the hope of gaining sudden wealth by finding a cave full of beautiful rock crystals they peril life and limb in scaling dangerous precipices or hanging suspended over frightful abysses, searching where ever they may catch a glimpse of the silver-white vein in the granite rock, the sign that near by is a deposit of the precious mineral. A Swiss peasant, a few years since, realized this hope. He found at Galensteck, above the Tiefengletscher, a granite cave from which he took over one hundred crystals, the first weighing about 120 pounds. This was brought to America, and is at present, we believe, in some cabinet in Philadelphia. Another fine crystal, named the "Grandfather," was kept at Berne. This weighed 265 pounds, but was not as fine a crystal as the first mentioned.

Progress.—A German watchmaker boasts, in his advertisement in a horological publication, that he sells cheap and good watches, which he guarantees for four years. They are cheap, because he has found out that it is a useless expenditure of time and money to adjust them. This procedure belongs to the many other antiquated, fossilized ideas. Adjustment—pshaw!

Sacreligious.—A curious piece of carving is to be seen at one of the Paris museums. It is a confessional of old Florentine workmanship. Besides the marvelous work on the panels it is surmounted by the head of the Saviour, which, on turning a spring, disappears, and gives place to a diabolical visage, with horns and tongue of fire, well calculated to strike a healthy terror into the mind of penitents.

Adroitness of Advertisers.—A jeweler in Germany offered some time ago a lot of watch chains at an exceedingly low price, and guaranteed that they would not turn black in the course of ten years; if they should, he would pay a heavy sum as forfeit. They turned brown, however, in the course of a few weeks, and he was by a numbar of buyers threatened with suits. He wrote back to them that he had guaranteed the chains against turning black, but not brown.

Ladies' Pocket-Knife.—A celebrated old manuscript waxes enthusiastic on "The German Masterpiece;" to quote verbatim: "Being that famous knife which hath been for some time in England, and highly applauded by the most exquisite artists; containing in the handle sixty odd several figures, some engraved, others carved, and all in the admiration of those that behold them. It hath two keys, which opens seven locks, including various rarieties contained therein; it was seven years a-making, and valued by the author, the famous artist in Germany, at fifteen hundred pounds, and is now exposed to publique view for England's satisfaction. To be seen at Bartholomew Faire, against the King's head."

"High Priced" English Watch.—The Foreign Gossiper of the Circular, while overhauling recently a collection of papers and pamphlets, came across an item descriptive of a "high-priced" English watch. The following is the purchaser's story: "I bought this watch about four years ago of a firm in Cheapside, London, paying £15 for it, which was the wholesale price. I asked to be supplied with a good watch, and was assured that this one combined every possible improvement; it was, in fact, a combination of the patient thought and careful research of those most eminent in the science of watch work, embodied by the most careful and expert workmen of the day. It was pointed out that it had a compensation balance, which, by a beautiful and perfect construction, corrected any error that the piece would be subjected to without such an arrangement." He was told that he might be confident that his watch would not vary at the most more than a minute per month. Of course he was perfectly happy in the possession of such a treasure—but, alas! the disillusion came only too soon; his perfect watch did not keep in accord with public clocks, and the conviction was forced upon his mind that he had been "taken in." To follow the fate of the watch, it came in due time into a repairer's hand, who described it as follows: "Gold open-faced, sixteen size watch, manufactured, to judge from the case, at Clerkwell, London; the great work fairly and soundly finished; pivots of wheels good; depthing, with exception of fourth and escape, correct; the fourth had been hammered by examiner to rectify a mistake between finisher and escapement maker, that is shallow depth. It was left to what should be the most accurate part of the watch to be the most imperfect—the wheel and pellet depth too deep; and so, to rectify that, the escapement maker (with a perseverance worthy of a better cause) had ground half of the impulse of the second pellet away to get the wheel through the lever depth, and roller just as shallow—to correct which guard-pin bent over to an enormous extent to prevent over-banking. Staff-pivots as thick and badly shaped as they could be, and, as a fit crown to such a wretched piece of work, a balance-spring as soft as binding wire." Comments are superfluous

WORKSHOP NOTES

ENGRAVERS' CEMENT.—Rosin, one part; brick dust, one part; mix with heat.

TO CLEAN GILT SURFACES.—To clean gilt metallic surfaces dissolve 3 parts borax in 100 parts (both by weight) water, and gently rub the article with it; rinse with clean water and dry with a soft linen rag.

MUCILAGE FOR BACKING LABELS.—Mix pure dextrine with boiling water, until it assumes the consistency of ordinary mucilage. Apply with a full, evenly made camel's hair brush. The paper should not be too thin or unsized.

TO WRITE ON SILVER.—To write on silver, the tracing of which will never fade, take burnt lead and pulverize it; stir it with sulphur and vinegar to the consistency of paint, and write with it on silver plate. Let it dry, then hold to the fire so as to heat the work slightly and the tracing is indelibly fixed.

LENGTH OF LEVER.—You may easily ascertain whether or not the lever is of proper length, by measuring from the guard point to the pallet staff, and then comparing with the roller table; the diameter of the table should always be just half the length measured on the lever. The rule will work both ways, and may be useful in cases where a new roller table has to be supplied.

TO WHITEN IRON.—To render iron as white and as beautiful almost as silver, take ammoniacal salt in powder, and meet it with an equal quantity of quicklime. Dissolve in cold water and mix well. When done immerse the red-heated article in this bath and it will become as white as silver. Be careful not to burn the article by overheating.

TO ENGRAVE ON STEEL.—Lightly heat the metal and cover it with a layer of beeswax; hold it over a smoking flame to blacken the wax, to better see the lines desired to be drawn upon it either with a pin, pen or point. This done, run nitric acid diluted with twice its volume of water, over the lines laid bare. Be careful to spread the liquid of a uniform thickness. The operation will be finished in about three minutes.

TO BLUE STEEL.—In order to blue steel evenly the following will give satisfactory results: First blue the object without any special regard to uniformity of color. If it proves to be imperfect, take a piece of deadwood that does not crumble too easily or of clean pith and whiten the surface with rouge without letting it be too dry. Small pieces thus prepared, if cleaned and blued with care, will assume a very uniform tint.

LEVER PALLETS.—The clear space between the pallets should correspond with the outside measure, on the points of three teeth of the scapewheel. The usual manner of measuring for new pallets is to set the wheel as closely as possible to free itself when in motion. It can be arranged in the depthing tool, after which the measurement between the pivot holes of the two pieces, on the pillar plate, will show you exactly what is required.

ACID COLORING 14-KARAT GOLD.—Saltpeter, 4 parts; salt, 2 parts; hydrochloric acid, 3 parts. Put the first two in pot and heat strongly; add a little water; let boil up, and when it becomes a thin paste add the hydrochloric acid; stir up and put in the work, taking care to submerge it completely in the color; let it boil two minutes, add as much water as you did before muriatic acid, make it boil quickly again for two minutes, take out the work, boil in hot water, then in another pot of hot water to which a few drops of hydrochloric acid have been added, then rinse in hot water and dry as above.

WATCH CLEANING.—A few watchmakers clean by what is called the chemical process to remove discoloration from watch movements. The process is as follows: Remove the screws and all steel parts, then dampen with a solution of oxalic acid and water. Let it remain a few minutes, after which immerse in a solution of one pound of cyanide of potash to one gallon of rain water. Let it remain a few minutes, and then rinse well with clean water, after which you may dry in sawdust, or with a brush and prepared chalk, as it suits your convenience. It gives the work an excellent appearance.

ESSENCES.—Watchmakers use essences prepared according to several formulas. They are to be obtained at many of the material dealers, together with full instructions regarding their uses. The objects are left in a solution of these essences for a few minutes, in order to allow all adhering matter to dissolve; but they must not remain too long, as certain qualities of benzine, etc., are apt to leave stains. Dry the pieces on removing them, and finish by passing over a fine brush charged with chalk, and then rubbed down on a hard crust of burnt bone. This will produce a brilliant surface on either gilding or polished brass. The following composition, the ingredients of which can be found at any drug store, has been strongly recommended: 90 parts by weight of fine petroleum, and 25 parts by weight of sulphuric ether. The objects are immersed for several minutes; indeed, they may remain for a longer time without danger and upon the removal from the bath are found to be clean and bright. It must not be forgotten that many of these essences are liable to ignite from the mere proximity of a burning lamp.

NOTES ON ALLOYS.—Mr. Guthier, in his work on "Metal Alloys," gives a few suggestions on the subject of fusing the metals: 1. The melting pot should be red hot (a white heat is better), and those metals first placed in which require the most heat to fuse them: 2. Place the metals into the melting pot in strict order, following exactly the different fusing points from the highest degree of temperature required, down to the lowest, in regular order, and being especially careful to refrain from adding the next metals until those already in the pot are completely melted: 3. When the metals fused together in the crucible require very different temperatures to melt them, a layer of charcoal should be placed upon them, or if there is much tin in the alloy, a layer of sand should be used: 4. The molten mass should be vigorously stirred with a stick, and even while pouring it into another vessel, the stirring should not be relaxed: 5. Another hint is to use a little old alloy in making new, if there is any on hand, and the concluding word of caution is to make sure that the melting pots are absolutely clean and free from any traces of former operation.

NOTES ON REPAIRING A WATCH.—The chief fault in low-class levers is that they generate too much friction and that but a small portion of the motive power is left for expenditure in vibrating the balance, which must have considerable impetus to unlock the pallets. Hence we find strong mainsprings a necessity in this class of work, entailing much wear and damage to the immediate connections. Accuracy in any part of this class of work cannot be taken for granted, and before taking the movement out of the case, a suspicious vigilance is desirable, to see that winding and hand-square are free of case and glass, and that the balance, endstone and screws are free of the case. Most of these watches have brass edges on which the joint and dial are secured (English low-class lever watches are taken as subject to these remarks), having three feet to secure it to the plate. If the watch has been going any time, the joint and three feet are usually loosened, not having sufficient substance in the brass edge, to endure the strain incidental to winding and opening the watch. Soldering the feet carefully is sometimes done, but a better plan is to put a hollow punch in the vise, which will hold each foot loosely, and with a sharp-pointed three-square punch strike one fair blow with a hammer in the center of the rivet end of each foot. The joints may be tightened with an ordinary round punch. Some care is required or the dial may be altered in position on the watch, and caution in repinning the dial is desirable, as the pins often project and come in contact with arts of the train of wheels.

Preliminary Inspection Before Taking Down a Watch.

[FROM THE GERMAN BY HERMANN HORRMAN.]

EVERY order-loving workmen, upon finishing a piece of work and before commencing another piece of work, should clean up his bench, leaving only the most necessary tools, such as keys, screw-drivers, tweezers etc., because order and cleanliness are the primary conditions on a watchmaker's bench. If he uses paper on his bench, then the old sheet, in case it is no longer very clean, must be replaced by a new and clean one. Tweezers, screwdrivers, in fact, all the tools, are to be kept in good condition, because only with good tools is he able to do good work. This advice applies especially to the care of screwdrivers, of which the workman should always have a good assortment to fit all kinds of screws; if he is engaged on new work, they should be of brass for palpable reasons. It is indeed a true saying "A bird is known by his feathers;" which may be paraphrased into "A watchmaker is known by the state of his tools."

In order to prevent an interchange of screws, the watchmaker should use a small screw bench, in which the screws are placed in the order in which he takes them out of the watch, during the course of work. Various devices are used by watchmakers for safely keeping the different parts of the watch; a small lided box with a number of divisions is to be recommended. It is also another primary condition, that the watchmaker's hands be clean and free from sweat; if he is troubled with sweaty hands he should wash them frequently in cold water.

When taking a watch in hand in order to take it down for adjustment; * the watchmaker's glance falls doubtlessly first upon the dial and he will at once notice whether this stands straight—that is, whether the XII stands at its proper place. The correction of this will be treated at some future time.

He next examines the case to see whether the bow is fastened well, and whether corrections are necessary at the snap or the joints. These corrections can be made prior to actually taking down the watch, so as to lay the case aside when engaged with the different parts of the latter. If the bow is insecure because the screw in it will not draw, take the bow out, file its ends slightly pointed or with pivot-like shoulders, and make a new, well-fitting screw. Then bend the bow suitably together by striking it with a wooden mallet and spring it again in its place. A pair of bow pliers may be used here to advantage. After screwing in the bow screw, neither the screw head nor the spindle end should project unnecessarily, because these parts catch easily in the pocket or injure the wearer by scratching his fingers.

The joint must fit well and its ends be rounded, not left sharp so as to tear the wearer's pocket. The case must close firmly, but not so tightly that a tool is necessary to open it. Perhaps no retailing watchmaker will buy an assortment of watches which close too easily. Should the case close too firmly, try by rubbing the rim with bees wax to soften it by opening and shaking repeatedly. Should this bring no relief, then a few taps with a wooden mallet upon the joints and around the rim will oftentimes ease the snap. But remember not to do this as long as the movement is in the case. If nothing beside taps with a mallet will ease the snap, do it after the movement has been taken out. Some watchmakers use a specially constructed graver with which they carefully remove the sharpness of the inner snap rim on the bottom.

Especial care should be taken when testing the bezel closing; the dial is sometimes too large or thick; again, prevented by projecting ends of screws it will not lie flat, and a slight careless pressure will crack it. Should the dial be too large, reduce its circumference after having been taken off, by filing with a sharp flat file with fine cut or an emery file. It is well to have the file strokes passing from the center outward, and to lubricate the file with oil of turpentine. If the bezel or the joints are bad it is better to hand the case to a casemaker for correction.

In order to protect the movement against dust and dirt, it is well to leave the snap of the dome fairly tight so as to render the opening and shutting difficult to the wearer. The set hand square should be a trifle below the dome, as it will in a thin case press against the back of a watch by an accidental bending of the case; the top of the square should be rounded, not flat.

It occurs sometimes that the end of the hand square touches against the closed crystal and impairs the shake of the center wheel. By heavy crystals this pressure is occasionally so great that the center staff is pushed back and protrudes beyond the dome. It is therefore advisable not to shorten the set hands square before being satisfied that it is actually necessary. Next examine by opening and shutting the dome, whether the dust caps pinch in its holes. These defects frequently impair the shake of the center wheel. Should the winding and set hands holes in the dome be so small (which often occurs) that it is hard to find a fitting key, and the watchmakar does not know whether it is the fault of the latter or whether it fits, they are to be opened by broaching and the burr removed with a counter sink.

It is well, perhaps, to append also the remarks of Mr. Cl. Saunier on the same subject.

CASE, GLASS, DIAL, DOME.

Glance at the case in order to ascertain that it has not received a blow or been subjected to pressure, that the joints and fly springs work well, and that the hands in rotating touch neither the glass nor dial. By laying the nail on the surface of the glass it will be easy to see whether there is sufficient freedom between the socket of the hand and the glass. In case of doubt place a small piece of paper on the hand, close the bezel and tap the glass with the finger while the watch is in an inclined position. If free, the paper will be displaced.

The set hand square should be rounded at the end and a trifle below the level of the dome in order to avoid the possibility of contact in case of any accidental bending of the back of the watch, and the dome must not press on the balance cock wing or the central dust cap (if present). The above remark also applies to the winding square of a fusee watch.

There must be sufficient freedom between the going barrel teeth and the banking pin of the balance on the one hand, and the internal rim of the case, the fly springs and the joint on the other. Otherwise there is danger of contacts when the case is closed, which occasion irregularity and stoppages are often difficult to detect.

The dome must be at a sufficient distance from all parts of the movement, more especially the balance cock. If there is any occasion for doubt on this point, put a thin layer of rouge on the parts that are most prominent. Close the case, and, holding it in one hand to the ear, apply a pressure at all parts of the back with a finger of the other hand, listening attentively in order to ascertain whether the vibrations are interfered with. If the interval is insufficient, a trace of rouge will be found on the inside of the dome. In such a case, if the dome cannot be raised or hollowed slightly in the mandril (when formed of metal), lower as far as possible the index work and the balance cock wing, and fix in the plate, close to the balance one or two screws with mushroom heads that will serve to raise the dome.

Ascertain that the hands stand sufficiently far apart, that the hour hand does not rub against the hole in the dial, and that the minute hand does not come nearer to the dial in one place than in another, a fault which may arise either from the dial not being flat or from the center wheel being badly planted. Remove the movement from its case, after making sure that it is held steadily by the locking screws; take off the hands and see that the hour wheel has the right amount of shake; this freedom may be diminished, if required, by

* The author treats of the "adjustment" of a watch, although his remarks apply with equal force also to its "repairs."

laying on the wheel small washers of tinsel cut out with a punch. If the dial presses against any part of the movement, or is not flat, or comes so near to any of the pivot holes as to draw off the oil, it must be ground away until a sufficient amount of freedom is obtained.

Art Work in the Precious Metals.

A PARIS letter announced sometime ago, that in that city repoussé work is at the height of fashion in silver ware. Although numerous lovely pieces are constantly produced with this process, with the help of chasing, yet that exclusiveness ought to be discouraged as many articles in stamp work are by some persons mistaken for repoussé.

There are three kinds of repoussé work. *Repoussé au bois* is produced by means of an iron matrix, which is cut from a wooden model; a thin sheet of metal is driven into this matrix by means of pieces of wood. Most of the large objects made in Belguim are manufactured in this way, but only a debased style of work comes from this process. By *repoussé à tour*, or "spinning," a large number of forms are executed which would be difficult to produce by the hammer. The result is obtained by means of a blunt tool, the metal being pressed against a wooden pattern which has been turned into the desired shape.

Next comes *repoussé au marteau*, the only veritable repoussé. The word repoussé has the same root as our English word repulse; hence, it means, *pushing back*, and not pushing forward; the real part of the work is the driving back of the ground, and not knocking forward, as so many imagine. To execute a work of this process, the workman makes a tracing of the drawing to be carried out, and attaches it to the silver, which has been fixed on some melted pitch, contained in a hollow hemisphere of iron, of considerable weight. As soon as the pitch is hard, he dots through the tracings on to the metal with a fine pointed punch, striking the punch just hard enough to make the mark show through the silver on the under side that is to be worked upon. The metal is then taken off the pitch, and cleaned, when the design should be just seen dotted on the back as well as on the front. The workman then roughly drives up from the back any part that has to be very prominent, such as the body and head of a figure, giving only a rough projection where these parts would be, and taking care that they are high enough in relief. The metal is then softened by heat and again put on the pitch contained in the iron bullet before mentioned. This bullet is placed in a ring of thick leather, generally about six inches in diameter, so as to turn about easily and yet be very firm. Now begins the actual work; the artist drives down the ground by means of small punches, of which a large number are required of every possible shape—round, pointed, square, hollow and for matting. These punches may number a thousand, and are required of every size, so as to get into the smallest corner. The design is now executed by the artist workman, holding the punch lightly between the finger and the thumb, traveling over the work knocking it each time he moves it onward with a small flat hammer. After going over the plate in this manner and getting a certain amount of relief, the plate is taken off the pitch, heated to a dull red heat so as to anneal it and then the same process is gone over again, and repeated until the requisite relief is attained, at the last time all the fine shadows being put in and the ground receiving a fine "mat" surface by means of a tool called a "mattoir."

If the piece is to be a vase, the process is somewhat different. For the execution of such an object, the design has to be first drawn. The modeler then proceeds to model the parts that are to be cast, such as the handles and spout. The body of the work is then beaten into shape and joined with a solder that melts only just before the silver wanted dissolves, so as not to be affected when the other parts are put on, for which a quicker solder is used The ornament upon the vase is now obtained by applying the internal surface to an iron which by frequent blows upon the end farthest removed from that in contact with the silver, is made to vibrate. These continued vibrations, regulated by the skill of the workman, produce the relief. The interior of the vase is now filled with pitch, and the work is finished from the exterior as before described. If the piece is to be further enriched with engravings that is now done, the handles and other parts are adjusted and the whole is then ready for polishing.

For all these several parts there is usually great division of labor, and even engraving is divided into several branches, as ordinary plate engravers would know nothing of the engraving of silver vessels, this work being a very arbitrary mixture of chasing and engraving. Chasing in England as on the continent is what is termed the work of the *ciseleur* in France, and is a series of hammerings with small punches and chisels, then cutting with fine tools and gravers. Engraving is done entirely by the hand, excepting large coarse work requiring the hammer and chisel to cut it out; but all fine engraving is done by the pressure of the hand. By practice great accuraey and freedom can be acquired, and so few follow this branch of the trade that all engravers command good wages, there being room for many more to learn the art.

Lubricating, and Kindred Points.

IN SPITE of the many advices and directions for lubricating, published periodically in the columns of THE CIRCULAR, the repairer will frequently come across a watch, every part of which was by some ignorant botch oiled to its utmost, sometimes with an inferior oil which in course of time became sticky and gummy, glueing the several parts together. Let those of the readers of THE CIRCULAR not yet well posted on the subject of lubrication, remember that *a brass or gold ratchet tooth lever escapement needs no oil*. Occasionally (but very seldom, however,) we find a steel ratchet-tooth escape wheel; *this* should be oiled or it will soon cut, and one will find the escapement full of fine red dust like rouge. On the other hand, the club tooth lever needs the pallets oiled, even if the escape wheel is of brass or gold. This need of oil on the pallets of the club tooth lever escapement is one, if not the only, serious objection to the use of this style of lever. It is the escapement for excellence to go safely through the hands of that class of workman who have more strength than skill. But that it will hold its rate through months of test with the ratchet tooth is not to be thought of. If finely made in connection with an isochronized balance spring, a club tooth escapement will give splendid results, and be free in a great manner from liability to injury to which a ratchet tooth escapement is subject; for instance, your able-bodied watchmaker is putting up an English ratchet tooth lever; when he comes to putting on the canon pinion, he finds it too loose to carry the hands softly; now, what does he do? He probably takes his cutting pliers and seizes the center arbor and wrings a burr up on the center arbor, applying force enough in many instances to bend the scape wheel teeth. And even if he does not in the first instance, he puts the canon pinion on so tight that he does bend the teeth in trying to get the pinion to turn on the center arbor. Now, it is a well authenticated fact that four out of five instances of bent teeth in ratchet teeth scape wheels are due to this cause. The true way to remedy the defect of looseness in the canon pinion is to try the pinion on the arbor when the watch is apart proceed. How to remedy it in the best way is a question that has puzzled workman ever since the introduction of a loose pinion both as regards the canon pinion of the English style or the hollow cener pinion with set square of the Swiss. This fault in a watch is one which is passed over too lightly by a large majority of workmen, they satisfying themselves with a make-shift method of some kind.



Proceedings of the Watchmakers' and Jewelers' Union.

[NOTICE.—We shall be pleased to receive and discuss descriptions of new tools, attachments and improvements in any branch of our trade, and publish them free of charge; also inquiries for those desiring information on any point of general interest. Communications should be written as concisely as possible consistently with clearness, on only one side of the paper, and be received here by the 10th day of the month, in order to be discussed at our meeting for that month and inserted in the next issue of THE CIRCULAR. Address them to "Secretary of the W. & J. U., care of THE JEWELERS' CIRCULAR, 189 Broadway, New York." For full information for correspondents, see our Proceedings in THE CIRCULAR for October, 1889.]

Twelfth Meeting.—Reported by the Secretary.

The September meeting of the Union was well attended, and although but few communications were received, they were all of general interest, and a very enjoyable and instructive discussion was had. The first letter read was on the subject of

PARACHUTE REGULATORS.

Starbuck, Minn , August 31, 1889.

Secretary of the W. & J. U.:

Please accept my thanks for the valuable proceedings on the gravity escapement. I now want to ask some questions regarding a compensating attachment on the watch regulator, which opens the curb pins in cold and closes them in heat, of which I have seen some in very fine Swiss watches in the old country. As I do not remember its name, I herewith enclose a drawing and will try to explain same. I consider there are many watchmakers in this country who are not familiar with this compensation, and I think a discussion on this subject will prove interesting reading and be of benefit to them. This compensating attachment consists of two circular-shaped prongs, one of steel and the other of brass. The latter is made to fit inside of the former, and the two are hard soldered together, making a compound bar with two ends. The outer end is journalled underneath on the regulator, forward near the curb pins, so that the inner end, which is loose, has its place where the outer curb pin (which is fastened to this end) should be on the regulator. The inner curb pin is fastened to the regulator as usual. As the brass portion is inside the prongs, it will make this wider in heat, and consequently the movable end to which the other curb pin is fastened will carry the latter nearer into the inner curb pin and the reverse in cold. To experiment, I have made one such compensating attachment to the regulator, adapted it to a good lever watch with steel balance, and adjusted it by filing the brass part of the sponge inside until it now compensates nearly correct. It seems to me that this compensation has some advantages over the compensation balance, of which, in my opinion, one is that the balance is not expansions and contractions, and is consequently not liable to be thrown out of poise in extreme heat and cold. But as it is not in use there must be some fault with it which I should like to have explained.

S. L. G.

MR. HOROLOGER was called upon to explain the matter, and said that there were several weighty reasons why this style of regulator had gone out of use. One was that the labor of making, finishing and adjusting one so that it would compensate closely was perhaps fifty times as much as was required on an expansion balance. The balance was formed in the lathe, so far as the expansion segments are concerned, and could be done with almost mathematical accuracy. The steel is first turned off true on the outside, the brass soldered on it, and then the outside of the brass is turned off perfectly true, securing a uniform thickness of metal all around. But no such accuracy is possible with the parachute regulator. That is practically all hand work, and subject to all the imperfections inseparable from the work of the hand, errors of measurement, sight, etc. It is well known that any rotary working, such as the turning in a lathe, is conducive to the greatest possible accuracy of form. But a glance at the accompanying cut of the parachute regulator will show that it is one of the worst forms to get well made, besides that the two sharp corners at the middle are very objectionable and interfere with the regular action of the circular portions. As the correspondent had explained, the bi-metallic bar was made of steel outside and brass inside, the end *1* being secured to the regulator, while the end 2 is free to move to or from the curb pin *3*, as the



compensation bar may curve one way or the other under the influence of changes of temperature.

Another objection is that it is not desirable to have the curb pins *2* and *3* change their distance apart. It is well settled among watchmakers that the two regulator pins should be as close together as they can be and not bind on the hairspring, and they should remain so. But the parachute regulator cannot be used without violating that principle. In its medium or normal position it must have the point *2* at some distance from the pin *3*, in order that they may close up and come nearer together when acted upon by heat. On the contrary, when acted upon by cold, the pins spread still further apart, although they were already further apart than they should be.

Besides these matters of principle, there are numerous practical objections to the parachute regulator. If the hairspring expands a little more than usual from a fall, a jar or a wide swing of the balance, the outer coil of the spring comes in contact with the inner portion of the bi-metallic bar, and its proper action is destroyed. And it is difficult to avoid having too much metal at *2* come in contact with the spring at all times. Then if we observe that the whole length of this heavy bar, from *1* around to the corners and back again to *2*, is totally unsupported and hangs by the end at *1*, we will see that every jar of the watch is liable to swing the loose end *2* towards the vibrating balance, and cause it to catch or rub on one of the balance arms. In many watches the pin *3* is made with a foot or *T* on its outer end, and is put loosely in the regulator so that it can turn easily. When this foot is turned towards *2* it sets over the space between *2* and *3* and shuts it up, so that the hairspring cannot be jarred out of place; when it is turned transversely or towards the figure *3*, the space is open and the hairspring can be inserted or removed. But when such a foot is used on the pin *3*, the workman must see that it does *not* rest on the end of the point *2*, as that would hold it and prevent its free movement as the bar expanded and contracted. This would entirely destroy the value of the compensation. The foot must be close enough to the point *2* to prevent the hairspring coils passing between them, over the end of *2*, but at the same time must not touch *2* except when some jar shakes them together for an instant. Great care must be taken here by the workman. I have often found the foot *3* so tight that it squeezed the point *2* up against the regulator and held it fast, unable to move at all. Of course, the "compensation" did not operate. There are other objections, but the foregoing will show how a thing apparently good may really be valueless in principle, or may be so far inferior to some more practical device as to be practically valueless.

CUTTING WATCH WHEELS.—HISTORY OF AMERICAN WATCH FACTORIES.

Pensacola, Florida, August 24, 1890.

Secretary of the W. & J. U.:

Please answer the following inquiry in your Round Table department of next issue:

Are the teeth of the train wheels in American made watches cut and rounded off at the same time by one and the same cutter? I know that the practice in Swiss factories is to first mark the teeth by a straight cut and to round them off afterward, enlarging the cut at the same time. Which is the better method of the two?

Please give title and price of a book published say, 2 years ago in Chicago or Elgin, containing the history of the American watch factories, with illustrations of the various concerns.

Thanking you in advance, I remain,

Yours respectfully, J. N. SCHIELL.

MR. EXPERT replied to this letter, and said that both methods were followed, but probably the single-cut process was used far the most. Theoretically it is the best, because, if the cutter is properly formed and the machine is accurately divided, the wheel will be correctly cut at one operation. Where one cut is made, and another cutter is used to finish the shape, the first cut is depended on as a sort of guide for the cutter in the second operation, and any errors in the first cut are repeated in the second. This is exemplified by the ordinary rounding up tool used by all repairers—it rounds up the teeth, but does not correct the errors in the division or spacing of the teeth, if any such errors existed. To be sure, there should be no errors in the first cut, but even in that case, a projecting feather-edge, or a bit of metal in the teeth, or teeth bent or jammed, and many other contingencies might cause an error of position in the second cutter. But if the second cutter has its own position, and does not require to be guided by the first cut made, there is the difficulty of adjusting the roll of partly cut wheels in the machine in such a way that the second cutter shall exactly follow the first, and not cut more on one side of the slot than on the other.

The tendency of modern working is to reduce the number of operations, and not make two cuts when one will do the work just as well. The cutters are shaped with the utmost pains to secure the precise form which the tooth should have, and it is evidently advisable to finish at one cut if possible. To this end the cutters are made very solid and strong, the whole machine is very firm and rigid, and the cutter is revolved very rapidly, so that the chip taken off at each revolution is very small. Under such circumstances there can be no objection to completing the tooth at one operation, because the thinness of the cut prevents any danger of springing or clogging, and if the division is accurate a perfectly cut wheel is sure to be the result.

As to the book spoken of, he did not remember to have read of it. Perhaps it was an advertising pamphlet issued by some western manufacturers. If so, and they should see this notice, they can communicate with Mr. Schlied, or send him a copy of it. He only knew of one such history, and that is the excellent one compiled by Mr. Chas. S. Crossmann, 23 Maiden Lane, and published in THE JEWELERS' CIRCULAR. That, however, was not illustrated.

MR. STYLUS was next requested to present his sketches to assist the members in advertising their wares to the public. Among those offered was that which accompanies these minutes. MR. STYLUS suggested that some such reading matter as this might be appended. "A Thing of Beauty is a Joy Forever,' so is the watch. The accompanying cut is no exaggeration of its effect on the owner. It produces such extreme satisfaction and pleasure in anybody who is fortunate enough to possess one that the feeling takes entire possession of the mind even under circumstances as trying as this. We are selling this paragon of watches at a sacrifice, and those who think of purchasing will benefit themselves by considering this before buying elsewhere."



Buffalo, Wyo., August 30, 1890.

Secretary of the W. & J. U.:

GENTS—Enclosed please find a photograph of a main-spring, still in the barrel just as I took it from the movement. The movement was an Elgin, 18-size full plate and eleven jeweled. The spring is a genuine Elgin spring, and is broken in seventeen pieces. What was the cause of its breaking in so many pieces?

Yours truly, J. E. CHAPPELL.

MR. UHRMACHER, who has had this subject in his charge for several months, responded to this inquiry. He said that Mr. Chappell would find in our proceedings for October, 1889, an engraving showing a mainspring broken in a manner almost identical with that shown in the photograph, except that the opening between the ends of the coils was not quite so wide as in his spring. That also was "an Elgin eleven jewel movement." Of course, the fact that the movements had eleven jewels has nothing do with the breaking of the spring, unless that grade of movement has some peculiarity about the construction of the winding works which could induce the breakage. On a careful examination of the photograph and measurement of the arbor, the diameter of the arbor collet is found to be considerably less than one-third of the interior diameter of the barrel, which is the size considered most desirable. Are such breakages most frequent in watches with small barrel arbors? It might, perhaps, be important to know whether this is so or not, as breakages would then be reduced to a very simple and practical cause. But he was afraid that we should not discover the cause quite so easily as that.

When a customer asks us why his mainspring broke, we say, "O, a spring is liable to snap off at any time." And some add: "That's the nature of the critter." But that is not much of an explanation. What is the real reason? We might say it breaks because it is bent too far, more than it could stand. Even when it is as hard as glass it will spring some, and if properly tempered it will, of course, spring a great deal further. But either of them will break if sprung too far. Yet we will find a spring so soft that it will bend and stay bent, without breaking, and at another time that same spring will snap off when it is not bent half as far. The metal seems to be in different conditions at different times. It may break cold, when it would not break if warm. The metal, if kept under constant strain or constant flexing, seems to get "tired," or lose its toughness or tenacity, and become more liable to fracture. We all know that if we let a watch run down and lay it away for a time, when we set it going again it does not run as it did before. The steel of the spring has been "resting," or changing or relaxing in some way. It has acquired more stiffness, and if we wind it up snugly at once, it may snap off immediately, or soon after winding, although it had run for years before. If it does not break, it is some days before it settles back to its original condition, so that the watch keeps the same time as before. Repairers who understand this, do not disturb the regulator when the watch gains or loses after being laid aside, but merely set it daily and let it alone till it "comes around," when it is already regulated as it was before. If they had moved the regulator to suit the "rested" mainspring, they would have to regulate over again when it had regained its previous elasticity.

MR. ELECTRODE here suggested that perhaps electricity might have something to do with making a spring break at one time and not at another. What holds the atoms of the metal together? Simply their electric attraction for each other. Now if someth ng occurred to weaken this attraction, the atoms would be pulled away from each other more easily than at any other time, and a "fracture" would be the consequence. He believed that some electric or perhaps magnetic influence might act upon the atoms of the steel at a certain place, to lessen their attraction for each other there, and let them be pulled apart at that point. He did not clearly see how electric influence could be brought to bear upon a mainspring in that way. In fact, it would be much easier to direct a magnetic force upon it. But he firmly believed that either electric or magnetic influence caused the breakages.

MR. REGULATOR said that on that theory he would advise watch repairers to test all broken mainsprings to see if they were at all magnetized. Also, if they had been exposed to the action of some magnetized body when they broke.

MR. SCREW-SQUEEZER advised to touch a match to it and see if it would explode.

MR. ELECTRODE retorted that MR. SCREW-SQUEEZER was a first-class hand at enlarging screws with a hammer and anvil, but his ideas about electricity and magnetism were rather crude. A wordy warfare then ensued, to the great amusement of the members prese t.

MR. URHMACHER here resumed the floor in continuance of his remarks. He said that the attraction of the atoms for each other held the metal together, but how this attraction was overcome in this case he could not say. We know that in some way the strain or

tension pulling the atoms apart became more powerful than the attraction between them, and they parted, and we say that the spring "broke." Now to apply this to Mr. Chappell's spring, which broke in seventeen pieces, it is plain that this excessive strain acted upon every coil of the spring, (except the central one, which was, perhaps, too soft to break), in a line from the center to the outside. When the strain became too great to bear, every coil snapped apart in that line. Then they all sprung outward and rested against the outside of the barrel, leaving a wide opening or passage between their ends. That showed that the spring was wound up when it broke, and the coils were then smaller; when resting against the outside, the diameter is larger, and this accounts for the opening spoken of in all the coils. Perhaps electricity or magnetism caused the fracture in a straight diametrical line running through all the coils. Perhaps the arbor hook stuck out too far into the barrel, or a bit of some hard substance got between the coils there, and all the coils were strained over it when wound up, causing a sharp bend there in the whole set. Then they all snapped—but why, we can only conjecture. If there was no hard particle or projection between the coils, if the hook did not stick out far enough to strain the coils resting on its end; and if the arbor collet is not too small, then the cause must evidently be something else—but what it is, is a mystery which we would all be glad to have solved.

Many compliments were paid to Mr. Chappell for the magnificent photograph sent to the UNION. The barrel was shown *over four inches* in diameter in the picture, with teeth, coils, arbor, etc., on a corresponding scale. Evidently the gentleman believes in doing well whatever he does, and we shall be glad to hear from him again. Also, from any of our readers who have an idea that they can explain *the reason why* such breaks occur.

As the hour was late, a motion to adjourn was then made and carried unanimously.

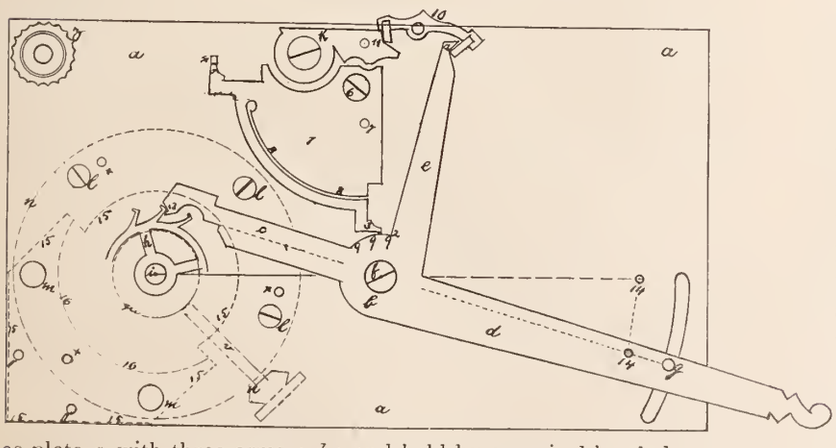


TOOL FOR MEASURING ESCAPE WHEEL AND LEVERS.

THE small tool, of which a description here follows, was invented for the purpose of measuring escape wheels and levers, when they are to be put into a watch anew, for detecting defects in the sizes of the same. The tool and its parts are enlarged nine times in the drawings.

In fig. 1 the plate *a* is of tempered steel, and $\frac{1}{48}$ of an inch in thickness; *b* is a movable piece of tempered steel, of same thickness

Fig 1.



as plate *a*, with three arms *c d e*, and held by a conical headed screw *f*, so arranged that lost motion can easily be taken up; *h* is a section of an escape wheel, in proper position to be sized; *i* is the point where the lower center *r* (fig. 2) comes up, and holds the escape wheel in position by the lower pivot; *k* is a small bridge of same thickness as plate *a*, with a screw and steady pin; *l l l* are three screws which hold the lower bridge *n* (fig. 2) in position, with three (marked *x*) steady pins belonging to it; *m m* are two holes through which two larger size screws, not shown in either diagram, pass from the under part of the lower bridge *n* (fig. 2), through the steel plate *a* into the upper bridge *o* (fig. 2), and hold same in place. At fig. 1 *n n* can be seen the outlines of the lower bridge, as a dotted circle. The holes marked with two parallel lines (||) are the steady pin holes for upper bridge *o*. Fig. 2 shows the tool more fully, especially the upper and lower bridges and centers; there the tool is shown in an upright position from the point designated by the cross mark +, fig. 1; *n n* is a large round bridge of brass with a thick piece of steel wire *p p* fitted and riveted into it, the whole being held in place by three screws which pass through from the upper side of steel plate *a*, only two of which are shown in the diagram; *o o* is the upper bridge, also of solid brass, the exact shape of which is not shown in the diagram, but the mere outline of it can be seen in fig. 1 by dotted lines *15 15 15*, and the dotted lines 16 show how much this bridge is turned out to receive even the largest escape wheel used in lever watches.

Steel piece *qu* is in thickness the same as that in the lower bridge, and fitted and riveted into the bars in the same manner. Now, through these steel pieces, *p* lower and *qu* upper bridges, are drilled very accurately holes exactly opposite each other, after the plan of upright or depthing tools, in which move steel centers *r* and *s*, much in the same manner as in the above-mentioned tools; they are loose enough not to stick, and light enough to have no play; *u* and *t* are conical holes or sinks in the opposite ends of both centers to receive the pivots of escape wheel pinions.

The steel parts *w*, *x*, *y* and *z* make up a device much like that used in old kinds of depthing tools, only a little more complicated; it is used to tighten the lower center, if necessary; on rod *y* is a spiral spring, which rests against the under part of steel plate *a* on one side and against steel arms *x* on the other, thereby always forcing piece *w* back again when the thumb-screw *z* is released, those letting go hold on center *r r* which is in turn pressed upward by a similar spiral spring fastened to its lower end and the steel piece *p*, but for want of space not shown in fig. 2. The center *r* is, when released, always with its point *t* a little above the steel plate *a*. That part of steel wire *p* is turned out enough to allow the longest and thickest pinion to enter; *v* is a long thumb-screw, used to hold the upper center *s* in position.

To use the tool put in the escape wheel, with its pivot ends between the two countersinks *t* and *u*, and by pressing down the upper center the wheel and lower center are forced down so the wheel surface will come almost even with the steel plate *a*, and at a level with steel arm *c*; then tighten thumbscrew *r*, and after thumbscrew *z*. Now, with a long-pointed piece of peg-wood, force the sharp corner of one of the escape wheel teeth into corner *13* of arm *c*, and thereupon tighten a thumbscrew *g* at the other end of arm *d* on the lower side of plate *a* fig. 1, but not shown there in diagram. We have then at corner *13* the exact size of the acting radius of the escape wheel; and, if the lever to be tried is of proper proportions, it ought to fit with its outer corner of entrance pallet into the sharpcorner *11* on bridge *k* (fig. 1), and with the inner corner of let-off pallet into the sharp corner *12* of arm *e*. If there is play between corner *12* and let-off pallet, while the corner of the entrance pallet is pressed into the bridge corner *11*, it shows the lever to be wider than it ought to be for that size wheel; if the inner escape pallet corner touches the corner *12* on arm *e*, but does not reach quite as far as into the corner *11* of the bridge *k*, this is proof that the lever is narrower and therefore smaller than it ought to be for that size wheel. With a wide lever, with full size (in thickness) pallet jewels, the tooth has but little drop falling off the escape pallet; and with a narrow small lever the tooth has but little drop falling off the entering pallet.

The distance between exact circle-center *14* on arm *d* and circle-center *14* on plate *a* gives us the exact working distance between escape wheel pivot and lever staff pivot. If this distance, after the wheel has been put into corner *13*, as described, does not correspond in distance between wheel and lever staff jewel holes something is wrong. The escapement may apparent ly be all right in its workings in the watch, but when upon taking exact measurement between the jeweling holes with a depthing tool, we find that our tool registers a greater distance between point *14* and *14*, we must judge that the maker did not transfer the depthing of the escapement properly, and in order to make things do had to push the lever itself a little back when tightening on its staff to make it work correctly; or he might have set the holes too far apart and then brought in the lever toward the wheel to make it deep enough. An escapement like this does not correspond with one in which the right angular action of wheel and lever are correct, a difference being made in the amount of degrees of locking and lifting both.

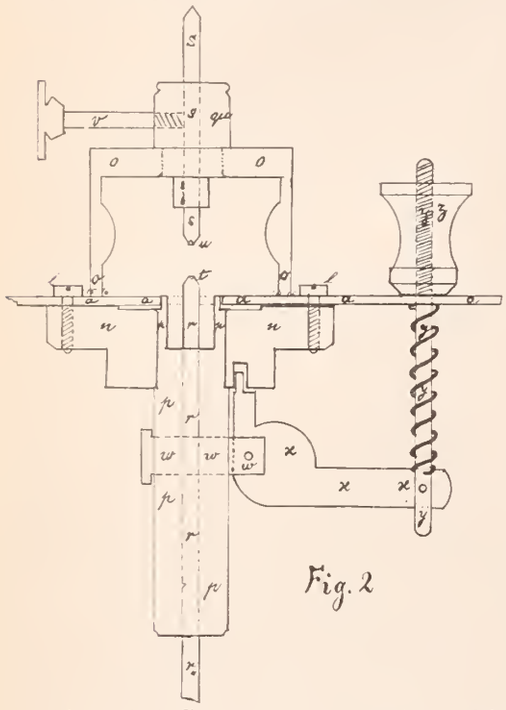


Fig. 2

If the escape wheel and lever are missing in a watch, get the centers *14* and *14* to show the same distance as the two jewel holes of lever wheel and lever in the watch; tighten screw *g*, and pick from your stock of wheels one that will fit with its teeth corners exactly into corner *13* of arm *c;* find a lever that will fit with the outer corner of entrace pallet and with the inner corner of escape pallet into corner *11* of bridge *k* and corner *12* of arm *e*, as shown in the drawing, and you will in this way get two pieces which will be the nearest possible perfect. If the escape wheels tried have no pinion, then use upper center *s*, with the sharp point pressing the escape wheel tightly against the plate *a*, and then proceed as directed.

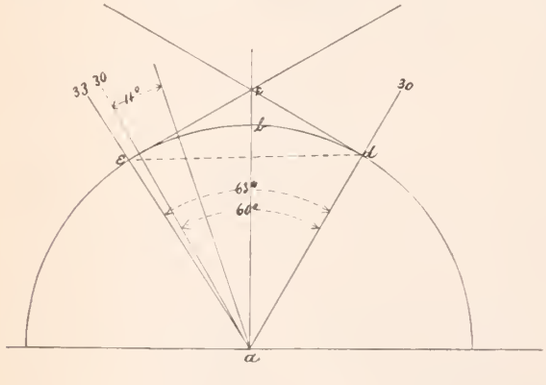


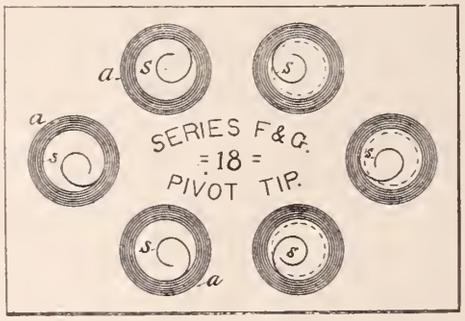
Fig 3.

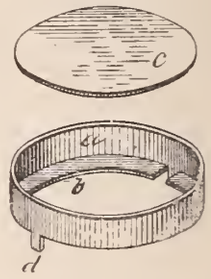
How to get the different distances on the arm.—Make a good drawing of an escapement on metal, polished or brass, the acting radius of the wheel to be the same as the distance from center *i* to center of screw *f*, arm *c*, fig. 1. This is, as in fig. 3, distance *a–b*. The distance on the tool from center of screw *f* to point *14* on arm *d* and *14* on plate *a* we get by taking the distance of pivots *a*, of wheel and pivot *c* of l ver in fig. 3; and as the lever generally measures from corner to corner of pallets 63° of the acting radius of the wheel, dotted line *a-* in fig. 3 will give us that distance, which is in the tool equal from center of screw *f* to corner *11* on bridge and *12* on arm *d* respectively; all the three arms are different lengths, and therefore the distance between the open arms vary accordingly. This the salient point in the tool, namely its capability to measure each and every size wheel lever alike. There may be a little difference in lever width, where the levers are figured out to a greater or less arc of motion than 10°, but it is very little, and happens mostly with foreign watches; on a lever of 9° arc of motion there is a difference of about 1½° smaller than than the 63°, hardly perceptible, and easily accounted for by the tool. The movable steel piece *h i*, fig. 1, which is held by a screw *6*, made on the same principle as screw *f*, is used to detect the thickness of pallet jewels and width of club teeth; the circle *9 9 9* measures, as here used, 11°, and the width of pallet and club teeth (see fig. 3 for 11°); now, if a pallet jewel is placed between the jaws of the movable piece *4* and *5*, it will also move jaw *3* toward corner *2* on arm *e*, and the space left is the thickness ot the club tooth of the wheel; if the pallet is 5½° width, the same amount must be left between *3* and *2;* if smaller or larger it shows that either the pallet or the tooth is too thick or too thin; *S S* is a saw cut to give spring pressure to jaw *3* against circle *9 9 9*, while against long pin *7* a spring acts from underneath the plate, which always keeps jaws *4* and *5* closed. The corners, *13*, *11 and 12*, are so cut out that, no matter how small or large a lever is used for tests, the tooth and jewel corners *only* touch the corners of the different arms.

The tool is mounted in upright position on a suitable brass stand. The inventor of this device, which has, we think, no counterpart in the market, is C. W. Mertz, of Republic, Mich.

DEVICE FOR HOLDING MAINSPRINGS.

ONE method of preparing watch-mainsprings for the market is to coil each one tightly on itself and hold it in such a condition by an encircling band of wire twisted thereon to form a tie. Another method is to wire or tie the springs together in bunches of a dozen, and inclose them in a suitably marked wrapper. The objection to the first plan is the absence of any designating marks or description, and the second plan is open to the objection that all the springs in the bunch must be handled together in order to remove a single spring, with the liability of damaging the entire lot from rusting occasioned by dampness from the hands and fingers. To overcome these and other objections, and to provide a means for protecting each individual spring and to accompany it with a proper accurate description or label indicating its size, structural character,





etc., and, further, to furnish a ready and convenient means for placing the spring in the barrel of the watch, are the objects of the present invention.

In carrying out the invention a circular cup *a* of any suitable metal or material, preferably of a depth equal to or a little less than the width of the spring *s* to be held is provided. A portion of the bottom of the cup or holder *a* is removed, so as to leave a flange *b* projecting inward from the bottom, as best shown in fig. 2. Into this cup so formed is dropped a false bottom or ejector *c*, of a diameter nearly equal to the internal diameter of the cup or so as to make a free fit, and ears *d d* are formed on the flange bottom of the cup, or it may be on false bottom, to constitute means whereby the cup or holder and its contained spring may be attached to a card. (See fig. 1.) If desired a card or label *e*, having the size, number, etc., of the spring marked or printed thereon, may be placed on the bottom *c*, or data giving information as to the size and structural character of the spring may be printed on the card to which the cup or holder is attached, as shown in fig. 1, or such data may be stamped or printed on the false bottom *c*. The spring *s* may be transferred from the cup or holder *a* to a watch-barrel, by placing the holder with its contained mainspring over the barrel and pressing on the false bottom, by which operation the spring will be crowded in properly coiled position into the barrel, thus saving the time and trouble usually occasioned in placing the spring in the barrel.

John Logan, foreman in the American watch factory, Waltham, is the inventor (Sept. 2, 1890).

RECENT PATENTS.

The following list of patents is compiled from the records of the United States Patent Office, and specially reported to THE JEWELERS' CIRCULAR.

Issue of August 26, 1890.

DESIGN No. 20,113.—HANDLE FOR SPOONS OR FORKS.—ARTHUR G. ROGERS, Meriden, Conn., assignor to C. Rogers & Bros., same place. Application filed July 26, 1890. Serial No. 360,091. Term of patent 14 years.

DESIGN No. 20,119.—HANDLE FOR SPOONS, &C.—WALTER WILKINSON, Providence, R. I., assignor to the Gorham Manufacturing Company, same place, Application filed Dec. 23, 1890. Serial No. 334,749. Term of patent 7 years.

TRADE-MARK No. 18,364.—SEAMLESS PLATED FILLED WIRE AND ARTICLES OF Personal Wear Made Therefrom.—Burdon Seamless Filled Wire Company, Providence, R. I. Applications filed July 5. 1890. Used since March 15, 1890. "The representation of a bird in profile resting on a piece of wire."

TRADE-MARK No. 18,366 —WATCH CASES.—ESSEX WATCH CASE COMPANY, Newark, N. J. Application filed June 27, 1890. Used since May, 1886. "The word 'Columbia.'"

434,929.—WICK-ADJUSTING DEVICE.—WILLIAM C. HOMAN, MERIDEN, CONN.—assignor to Edward Miller & Company, same place. Filed March 6, 1890. Serial No. 342,919. (No model.)

434,945.—WATCH-SHIPPING CASE.—ARTHUR J. NILES, LANCASTER, N. H. Filed Feb. 8, 1890. Serial No. 339,649. (No model.)

434,946.—TOOL FOR JEWELERS' USE.—ERASTUS N. PARKER, SPRINGFIELD, Mass. Filed Jan. 9, 1890. Serial No. 336,424. (No model).

431,964,—EYE-GLASS HOLDER.—CHARLES D. WAITE, PROVIDENCE, R. I. Filed May 23, 1890. Serial No. 352,903. (No model.) An eye-glass holder having two substantially parallel sides united at the bottom to form a hook or eye and having the sides provided with downwardly extending springs in contact with each other, the lower or free ends of the springs being reversely bent, and an atttaching pin and catch.

435,060.—CLOCK CASE.—SIMON GREENY, CHICAGO, ILL. FILED MARCH 29, 1890. Serial No. 345,889. (No model.)

435,068.—JEWELRY.—WILLIAM LEIDIG, NEWARK, N. J. FILED APRIL 16, 1890. Serial No. 348,201. (No model.) A finger ring having a stone socket or recess and a key provided with a pivotal shank, a slotted head, and a head to engage the plate for the stone, this stone having a back plate secured thereto.

435,185.—ELECTRICAL WATCHMAN'S CLOCK.—HARVEY S. PARK, CHICAGO, Ill. Filed Dec. 7, 1889. Serial No. 332,954. (No model.)

435,213.—ELECTRIC ALARM FOR CLOCKS.—WILLIAM H DEANE, BROOKLYN, N. Y., assignor to himself and J. J. Mahon, same place. Filed Jan. 30, 1890. Serial No. 338,604. (No model.)

435,243.—ENGRAVING APPARATUS.—VINCENT L. OURDAN AND CHARLES A. KOLB, Washington, D. C., assignors to the Ourdan & Kolb Engraving Machine, Engraving and Mercantile Company, of Virginia. Filed Mar. 26, 1890. Serial No. 345,408. (No model.)

NOS. 435,244, 435,245 and 435,246.—ENGRAVING MACHINE.—VINCENT L. Ourdan, Washington, D. C., assignor to the Ourdan & Kolb Engraving Machine, Engraving and Mercantile Engraving Company, of Virginia. Filed Mar. 26, Apr. 3, 1890. Serial Nos. 345,411, 346,456, 346,457. (No models.)

435,324.—BOX FOR WATCH MOVEMENTS.—WILLIAM J. SAVAGE, COLUMBUS, Ohio, Filed Aug. 17, 1889. Renewed June 28, 1890. Serial No. 357,009.

435,327.—WIRE CHAIN LINK.—FRIEND W. SMITH, JR., BRIDGEPORT, CONN., Filed May 10, 1890. Serial No. 351,298. (No model). In a chain-link made from a single piece of wire and having a loop at each end, the method of securing the free ends of the wire, consisting in int rlocking the ends and then bending around the loop wires.

435,354.—EAR RING.—EMANUEL CINER, New York, N.Y. Filed June 19, 1890. Serial No. 355,986. (No model.) The combination of an ear-wire having slotted horizontal sections, with a guard plate above the section, and a drop having a bar and a ball engaged by said section.

Issue of September 2, 1890.

435,416.—GRAVER HOLDER FOR ENGRAVING MACHINES.—ALLAN E. FRANCIS, Cleveland, Ohio. Filed Jan. 24, 1890. Serial No. 338,032. (No model.)

435,435.—AUTOMATIC TIME DETECTOR.—WILLIAM LIDDELL AND CHARLES J. Dillon, Brooklyn, N. Y. Filed Dec. 19, 1889. Serial No. 334,333, (No model.)

435,699.—STOP WATCH. AMI LECOULTRE-PIGUET, BRASSUS, SWITZERLAND. Filed June 7, 1889. Serial No. 313,452. (No model) Patented in Switzerland Feb. 13, 1889. No. 163.

435,765.—WATCH CASE HINGE.—DANIEL O'HARA, WALTHAM, MASS., assignor to the American Waltham Watch Company, same place. Filed Mar. 21, 1890. Serial No. 344,786. (No model.)

435,802.—PROCESS OF MANUFACTURING WATCH CROWN PIECES —ALLAN C Dalzell, Jr., Sag Harbor, N. Y. Filed Dec. 16, 1889. Serial No. 335,956.

435,820.—BUTTON.—NICHOLAS GEOFFROY, NEW YORK, N. Y. Filed June 20, 1890. Serial No. 356,036. (No model.) The combination with two buttons each having a rigidly attached pintle provided with legs of swinging eyes journaled on the pintles, and a link loosely connected to the swinging eyes.

435,834.—MEANS FOR ORNAMENTING WATCH CASE CENTERS AND OTHER LIKE Articles. Adolph W. Hoffmann, Brooklyn, assignor to Robbins & Appleton, New York, N. Y. Filed Dec. 31, 1887. Serial No. 259,495. (No model.)

435 835.—METHOD OF ORNAMENTING WATCH CASE CENTERS AND OTHER LIKE Articles. Adolph W. Hofmann, Brooklyn, assignor to Robbins & Appleton, New York, N. Y. Filed Dec. 31, 1887. Serial No 259,496. (No model.)

435,836.—METHOD AND MEANS FOR ORNAMENTING WATCH CASE BACKS AND Covers and other like Articles. Adolph W. Hofmann, Brooklyn, assignor to Robbins & Appleton, New York, N. Y. Filed Nov. 9, 1889. Serial No. 329,726. (No model.)

435,844—DEVICE FOR HOLDING WATCH MAINSPRINGS.—JOHN LOGAN, Waltham, Mass. Filed Feb. 15, 1888. Serial No. 264,069. (No model.)

435,890.—MULTIPLE TOOL —RHODOLPH H. FRANKLIN, BROOKLYN, N. Y., assignor to Charles C. Cummings, same place. Filed Nov. 27, 1889. Serial No. 331,829. (No model.)

Issue of September 9, 1890.

DESIGNS NOS. 20,143 TO 20,148, INCLUSIVE.—CANE OR UMBRELLA HANDLE. —Albert Rosenstein, Lancaster, Pa. Applications filed July 31, 1890. Serial Nos. 360,570 to 360,572, inclusive, and 360,574 to 360,576, inclusive. Terms of patents 3½ years.

DESIGN NOS. 20,149 and 20,150.—CANE OR UMBRELLA HANDLE.—ALBERT Rosenstein, Lancaster, Pa. Applications filed August 1, 1890. Serial Nos. 360,678 and 360,677. Term of patents 3½ years.

435,939.—MANUFACTURE OF CURVED TUBES FOR JEWELRY.—JAMES R. Mathewson, Wrentham, Mass., assignor to Edward P. Davis and William H. Wade, both of same place. Filed June 28, 1890. Serial No. 357,056. (No model.) The manufacture of curved tubes for jewelry, a longitudinally-curved drawn tube, with an integral closed end, the curvature being produced during the process of drawing.

435,961.—SPECTACLE-FRAME.—HENRY F. BODE, CHICAGO, ILL. FILED JUNE 20, 1889. Renewed Mar. 24, 1890. Serial No. 345,009. (No model.)

436,051.—DIAL FOR TIMEPIECES.—GEORGE K. COOK, JAMAICA, N. Y. FILED Sept. 19, 1889. Serial No. 324,447. (No model.)

436,153.—SUN-DIAL,—ARTHUR B. SATTERLEE, NEW YORK, N. Y. FILED Jan. 25, 1890. Serial No. 338,152. (No model) This sun-dial has a gnomon projecting therefrom, a circular perforation in the apex of the gnomon, a pointed projection depending from the top of the perforation, and a support for the pointed projection.

436,162.—REPEATING ATTACHMENT FOR WATCHES.—FRED. TERSTEGEN, Elizabeth, N. J. Filed Apr. 16, 1890. Serial No. 348,148. (No model.) The combination of a setting-lever for retracting the motor-spring of a repeater mechanism, a motor-spring and a shifting-wheel which disconnects the setting and acuating mechanism from the regulating wheels when the repeating mechanism is set and connects the same with the regulating-wheels when the repeating mechanism commences to operate to strike the time.

436,205.—WATCH DEMAGNETIZER.—CHARLES F. BERLIN, NEW YORK, N. Y. assignor to Alfred C. Smith, same place. Filed Jan. 15, 1890. Serial No. 337,016. (No model.) A demagnetizer comprising a demagnetizing-chamber, a coil of wire surrounding the same, and a rotary rheotrope having two opposite insulated plates, in combination with four brushes, two connected to the battery and two to the wire composing the coil, the latter being arranged to come in contact with the opposite insulated plates.

Issue of September 16, 1890.

TRADE MARK No. 18,438.—JEWELRY. RUBE ROBT. FOGEL, NEW YORK, N. Y. Application filed July 24, 1890. Used since Nov. 30, 1888. The words "Globe Jewelry Mfg. Co." in a horizontal line across the representation of a globe encircled by a horse-shoe.

436,343.—COMPENSATION PENDULUM. CHARLES E. EMERY, BROOKLYN, N, Y. Filed Sept. 24, 1889. Serial No. 324,906. (No model.) In combination with the ball of a pendulum, and with compound bars and compensating levers, flexible strips or springs adapted to secure together the several parts without slack motion, but so as to permit slight swinging movements.

436,456.—COMBINED LAMP AND ALARM CLOCK. WILLIAM GAERTNER, BOSTON, Mass, Filed April 30, 1890. Serial No. 350,030. (No model.) A lamp and clock, in combination with a sleeve fitted to slide on the wick-tube, a hinged lid on sleeve, a lever pivoted to the sleeve and to the lamp-top, and a spring-actuated plunger adapted to be released by the clock-alarm mechanism and engage the lever.

436,583.—CLOCK. FREDERIC A. LANE, NEW HAVEN, CONN., ASSIGNOR OF ONE half to Frank E. Morgan, same place. Filed Sep. 30, 1889. Serial No. 325,479. (Model.) In a pendulum clock movement, the combination of the time-train, the dial-work, and one or more equalizing wheels between the time-train and dial-work for the purpose of harmonizing the action of the dial-work with the vibrations of the pendulum, whereby change in the equalizing wheel the same movement is adapted to varying lengths of pendulum and consequently to greater or less running time without change of the time-train or power.

436 729.—JEWELRY PENDANT. GEORGE W. WASHBURN, WEST NEW BRIGHTON, N. Y. Filed Feb. 8, 1886. Serial No. 191,199. (No model,) In an article of jewelry having a pendant jewel setting, the combination of an upper part provided with an uncut connecting-ring, a setting having two of its cramps provided with tubes to let into the cramps and soldered fast, and a connecting bar held at its respective ends within the tubes and fastened in place without soldering it.

Problems in the Detached Lever Escapement.

BY DETENT.

THE ear-tests for adjustments is one of the most thorough and complete. I do not mean it to be understood that any and all corrections can be determined by the ear; but it is a fact known to most adjusters that many irregularities which the eye will fail to detect can be detected by the ear. We are all aware that the sense of sound is conveyed to us by vibrations carried through the air to the tympanum of the ear. Now, asks the reader, what has this to do with the adjustment of a watch? Much, I reply, if the vibrations of the parts which emit the noise detected by the ear are not in harmony; they must be in discord, or n other words, disagree, and become antagonistic. To analyze the effect, let us make a few experiments in acoustics.

As a primary experiment let us strain two wires upon a board; we first set up one wire, until its vibrations emit to the air waves corresponding to the middle C of a pianoforte; in this condition the wire will give 525 vibrations to the second, if the piano is up to concert pitch. We next set up the tension of the companion wire to yield the same tone, that is to give the same number of vibrations to the second. When the two wires are on the one board, we can allow a sensible difference of tension to exist and still the two wires will vibrate in unison, one yielding a little to the other, in order that the vibrations of both shall be synchronous. If we separate the two wires, or put each wire on a separate board, and place one on one side of the room and the other on the opposite side, and one wire is caused to vibrate, the sound waves in the air will immediately cause the other to set up synchronous and harmonious vibrations in response. But when the wires are separated, as just described, the tension on each wire must be more nearly alike than when the wires are attached to the same board; but, even when so separated, a small amount of license is admissable in the tension of the two strings.

Perhaps some of my readers will ask how are the deviations of such small intervals of time determined. I would reply, by comparison with light waves; but the methods by which the tests are made are too complicated to allow of explanation in the present article. To profit by such instruction in adjusting, one should accept the assertion that, if we desire to arrive at fine and close results in watch work, we must render those parts which constitute the sound-emitting portions of the escapement harmonious—that is, *they must vibrate in unison, and produce a clear, harmonious, musical tone.* If we strike one hand down on the key-board of a piano, with our fingers extended so that each finger will strike a white key, we make a *musical noise,* but there will be no harmony in it. So in the tick of a watch; if the sound-emitting parts are synchronous they will be melodious, not discordant. This should be looked to and studied by workmen. Let any workman make a practice of noticing the "tone of the tick" of a watch, and he will, in a very brief period of time, be able to judge of the average performance of a fine watch by the purity of tone. Not one watch in ten will have the same tone with dial up and dial down; but this is not of very great importance, as long as the tone in each position is clear and melodious.

The course to pursue to remedy an imperfect tone in the tick of a watch is not easy to point out; oftentimes it can be effected by simply repinning the balance-spring at the outer end of the coils. Again, both ends will need to be repinned; occasionally it will require an entirely new spring. The tick is given at the time of the escape of the tooth, and probably most of the sound comes from the ork striking the jewel-pin when the impulse commences to act. At this time the balance-spring is free from contact, except at each end, where it is attached to the collet at one end, and the stud at the other. In this position the balance-spring is free to receive such initial forces as establish the vibration in it which embodies in it the tone we hear when listening to the tick, and a cause which will in any way effect the tension of the spring will effect the character of the vibrations, and, of consequence, the tone. All these tones could give us intelligence of a change in the rate of our watch, if we could only interpret them.

I am led to speak at this length, from a conviction that the next great advance in adjusting will be governed by attention to what can be heard as well as seen in this matter. We can not instruct you to adjust and arrange your balance-spring so that it will emit a sound of any one musical note, or a combination, an octave, or fifths, but we should strive to avoid as much as possible a tone of dissonance and discord, because such sounds tell beyond dispute that the parts are each acting at variance with the other. Frequently, taking up a balance-spring a mere fraction, and placing a pair of light washers under a pair of screw-heads at the opposite sides of the balance, will entirely change a discordant tick to a clear, musical one. A slight change in the lock of the banking-screws may also do much in this way. A torsion force in the balance-spring will also effect the tone; I mean by this that a spring which is not true in the flat and the round, particularly in the flat. To explain: suppose we are putting on a new balance-spring, we true it in the calipers until it runs true in the flat before we pin it into the stud; in pinning into the stud we distort the spring so that the centre has a tendency to rise or fall; such a spring will give a pronounced difference in tone in the positions dial up and dial down. A balance-spring, after it is turned in the flat, should be removed from the balance to be pinned into the stud, and the points of *attach* arranged so as to bring the point where the spring is pinned into the collet opposite the curb-pins, when the regulator stands in opposite the centre of the index-plate. The spring is next pinned into the stud, so that it lies flat with the cock when held vertical; that is, the flat of the balance-spring, when held perpendicular, is parallel with the under side of the cock. The cock should then be lain down, and the point where the spring enters the stud bent so as to bring the centre of the collet to correspond with the centre of the hole jewel. This will probably require the outer coil of the spring to be bent away from the next inner one, as the spaces between coils of a close coiled spring are not sufficient for the stud or the curb-pins to act freely. What is required is that the outer coil of the spring should be so manipulated that the normal coils of the spring shall be concentric to the hole in the jewel which receives the pivot of the staff.

These precautions taken, usually the tones of the ticks, if one may be allowed the expression, will be nearly or quite alike, (if the frictions are the same) with dial up or dial down. The same precautions should be taken if the balance spring is one with an over coil usually called a Breguet spring ; it should lie flat, and the center of the collet correspond to the center of the jewel. A very little practice after one has had his attention called to it will enable him to make small changes which will effect the desired results—that is in obtaining a clear musical tone in the tick.

Of course, all scraping and rubbing noises should have been remedied before any attempts of the kind just noted are made. A tremulous motion of the balance-spring should be carefully avoided watching that such a condition does not establish itself in certain positions, as we often see a watch in which the spring coils and uncoils freely in all but perhaps one or two positions, while in these a rapid vibratory motion is established which gives out to the ear a sizzing sound which would lead an inexperienced workman to imagine there was an undetected friction in that position. Such vibrations are more apt to be detected in close than more open coiled springs. Usually springs developing such vibrations will be found a little out of sound, or to have an unequal space between the coils from being tampered with ; if restoring the spaces to their natural order and truing in the sound does not correct the trouble a new spring is about the only remedy. In my next communication I shall take up the over coil and consider the methods of making and adjusting it.

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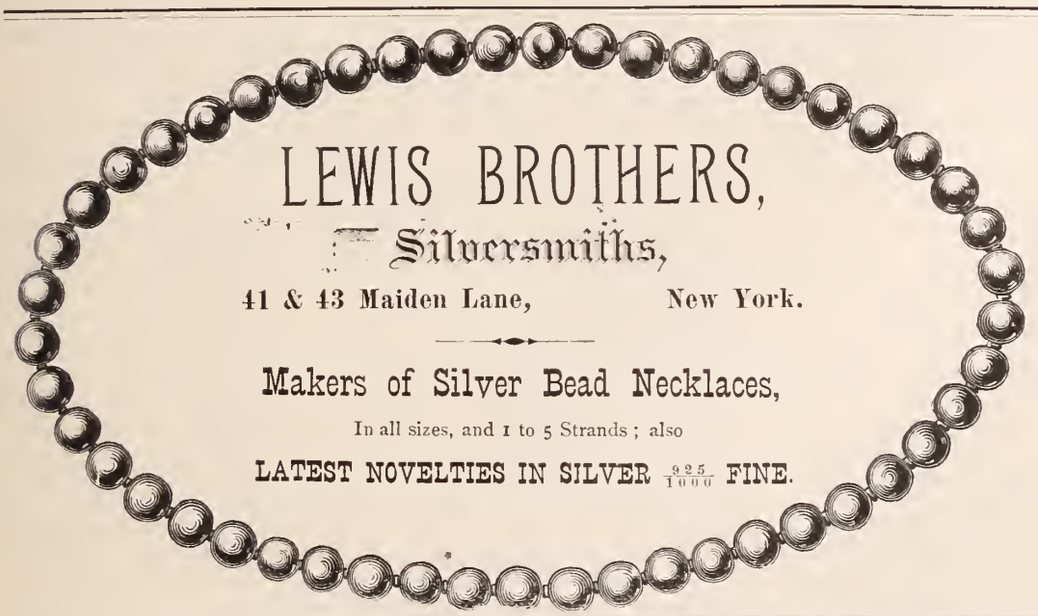
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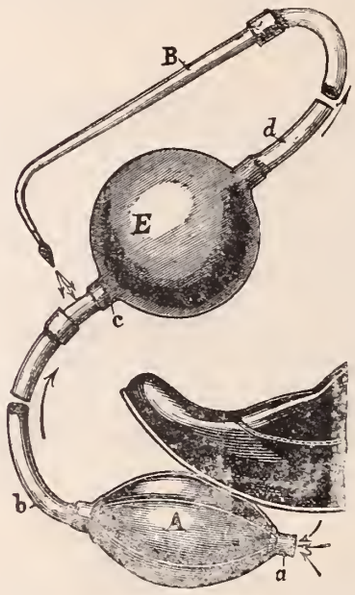
The Blowpipe.

THE blowpipe, together with a few other simple instruments has been in use for thousands of years; the Rhig-Veda of the Hindoos speak of it as the earliest utensil known, and in the antique paintings and sculpture representing metal working. the blowpipe is introduced, and its origin must be very ancient. In the paintings of Kourna, Thebes and elsewhere they are represented not only in their simplest form known to us, but with bulbs for condensing the moisture from the breath and other improvements which argue their use and gradual perfection prior to the earliest times of which we have any record or remains. Its use in mineralogy in analyzing and determining the metals in ores is not ancient and has been accredited to Anthony van Swab, (1738) and to Cronstedt, a score of years later, but with doubtful justice. Devices for condensing the moisture from the breath and for the more convenient carriage in the pocket or any small receptacle, are about all the improvements that have been made in the blow pipe proper from the earliest times.

In the proper manipulation of this implement considerable skill is required in order that a steady stream of air may be given without intermission. To accomplish this, the operator intercepts his tongue between the roof of his mouth and end of his pipe between his lips while taking in a necessary breath, and at the same time forces out with his lips a steady current of air. If the flame produced be irregular and jagged in appearance, it will be found that the muzzle of the pipe is not of the proper shape, which should be round. Should the flame present the appearance of a ring, it indicates that the mouthpiece is too large. Under the proper circumstances the flame is in the form of a red cone of a beautiful blue color. The heat produced is very intense. To further augment this heat it is usual to place the object heated upon a bit of charcoal, when practicable, which reflects the heat thrown against it and also gives out the heat of its own combustion. Various appliances have been invented for increasing the effectiveness of heat, the most notable of which is the oxy-hydrogen blowpipe, an instrument used for the purpose of burning oxygen and hydrogen gases. It would lead too far to give a detailed description of this appliance and various others, none of which, however, fully comply with the demands of the goldsmiths and metal-workers generally, as the flame is not sufficiently under the control of the workman; they will answer where a steady flame is required, but when it is now to be flaming, now contracted, they are useless, and until some inventor produces an instrument that combines the intrinsic merits of the original blowpipe with the advantages offered by the various improvements, we fear that the old instrument will not and cannot be supplanted by any invention up to date.

The *Journal des Goldschmiedekunst* contains the accompanying cut and description of a blowing apparatus, contributed by a watchmaker, the original of which, he says has for the last three years been used in his shop and proved itself to be so very useful, that he is desirious of acquainting others with its merits. The air pressure is occasioned by the so-called feeder *A*. This is a large egg-shaped india-rubber ball,* furnished with a valve opening to the interior. Its performance is readily understood. The air can get into the interior of the bulb, but cannot escape the same way, when pressure is brought to bear on the feeder, but must pass along through the tube, to finally escape through the orifice. The tube *b* is from one-half to one yard long, and ends in a very elastic air bag *E*, of india rubber, which is at its entrance *c* equally furnished with a valve with the same function, so that the compressed air contained in it must pass through the tube *d* to enter into the blowpipe *B*, through the orifice of which it escapes. This tube also is about 20 inches long, so that when using the apparatus the feeder can be laid on the floor and to enable the blowpipe *B* held in the hand to be conveniently moved over the workbench. (The two long tubes are for reasons of simplicity represented in the illustration as if divided.)

The manner of operation is as follows: When a pressure is exerted with the foot upon the feeder *A*, lying on the floor, the air contained in it passes through the tube *b* into the air-bag *E* and expands it. When raising the foot the feeder *A* will resume its former shape owing to its elasticity, and it then fills again with air, which passes in through the valve. At the next pressure with the foot the valve closes again, and the air is again impelled through the tube into the elastic air-bag *E*, which continues to inflate. Since the entrance opening of the feeder at *a* is about 4 millimeters in diameter, at least ten times as much as that of the escape orifice in the blow pipe, the air in the bag *E* cannot as quickly escape as it enters. The air in the bag, therefore, is compressed, and the tension created causes a continuous stream, the air-bag *E* performing the same functions as the air chest of a double action pump.



It is, therefore, not at all necessary to step at very short intervals upon the feeder in order to keep the air-bag *E* in constant tension, thus securing an uninterrupted flow of air. In order to keep the bag from bursting it is well to surround it with a netting, which permits only a certain degree of distension.

*[Such "foot-power" blowpipes have recently been constructed with a half-round feeder, the flat side of which lays on the floor, and prevents the sliding off of the foot. Persons accustomed to using them, praise them very highly.—EDITOR.]

Silver Refined by Electricity.

ACCORDING to a foreign journal devoted to the mining and kindred interests, the method of refining silver electrically is now coming into a somewhat extended use. It is most suitable for the refining of auriferous silver containing about 11 per cent. of gold, the cost in this case being only about fourteen cents per pound. The principle upon which the method is based consists in using an ordinary electrolytic bath anodes of an argentiferous matte, and a thin plate of pure silver as the cathode. The bath consists of a very weak solution of nitric acid containing about one per cent. of the acid. The anodes, which are about one-half inch thick, with a surface of about 13.5 square inches, are placed in muslin bags which retain the gold, platinum, peroxide of lead, and similar foreign materials in the matte. The current used is 150 amperes, and the potential difference between the plates one volt. During the whole period of work brushes are kept moving up and down the silver plates, which sweep off the silver deposited into troughs put for the purpose at the bottom of the bath. These troughs are removed from time to time, and the silver taken out and sent to the furnace. If the matte contains copper this is dissolved by the nitric acid, but is not deposited on the cathode. The electrolytic method of treating mattes containing the precious metals, will, doubtless, came into very general use when its value is better understood.

Cleveland, O. July 25, 1890.

Have made use of your journal to further my interests in watch work since 1872, and when serving my apprenticeship would have been at loss without the instructions from your journal. Horology general watch repairing and receipts have aided me in the past to a considerable extent. L. LEHMAN.

Death of John D. Negus.

John D. Negus, died on Sept. 26th, at his home, 391 Grand avenue, Brooklyn, in the fifty-eighth year of his age. He had been troubled by nervous prostration and general debility brought on by overwork. The deceased was a member of the firm of T. S. & J D. Negus, New York, a house enjoying a world-wide reputation as makers of chronometers and nautical instruments, due in a very great measure to the life-long efforts, the skill, and mechanical ingenuity which Mr. Negus brought to bear on his trade. Mr. Negus devoted himself largely to the study of chronometers, with the result of producing the first perfectly successful break-circuit chronometor in use. This chronometer is the delicate instrument in use at astronomical observatories. He also perfected the marine chronometer. The deceased gentleman recently became a Mason. He was a veteran member of the Seventh Regiment. He was a son of Thomas Negus, a man well known in the hardware trade in this city, and he leaves a wife, a son, and three daughters. The funeral services were held at the family residence on Sept. 29th.

A Pretty Toilet Novelty.



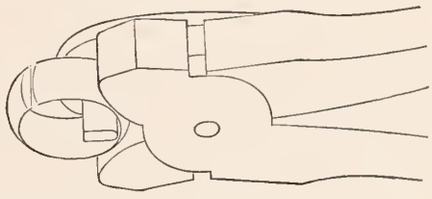
The Puritanical Tolstoi would have the cold shivers if he could see the little example of feminine luxury illustrated in the accompanying cut. It is one of the prettiest novelties of the season in the silver line—a powder puff for milady's boudoir, handsomely mounted in silver. The puff is of the finest swan's down and the handle is richly chased, the finishing touch being a dainty ribbon bow nestled under the down. There are three sizes now on the market, small, medium and large. The cut given here is taken from a small pattern reproduced two-thirds size. An unusually brisk demand has already sprung up for this useful toilet article, so say the makers, J. F. Fradley & Co., 23 John Street.

The Artificial Eye Industry.

M. Zineman, of Zineman & Bro., opticians of 130 South Ninth street, Philadelphia, returned from Europe on the *City of New York* last month after a three months' absence. The trip was taken with the double purpose of seeking recreation and getting a bird's eye view of the optical business in the old world, one of his special missions being the investigation of the artificial eye industry of Thüringen, Bavaria. For some time past the Messrs. Zineman have devoted considerable attention to the importation of artificial eyes, and with such signal success, as to virtually revolutionize the business. A few years ago only the rich could afford the luxury of an artificial eye, and in consequence of their expensiveness, the very class most in need of them, the laboring people who by their occupation are most liable to optical injury were debarred from purchasing. When this enterprising firm came into the field they at once saw the opportunity offered them, and by purchasing largely and advertising their goods to the public, they so stimulated the demand that a luxury of the rich soon became a necessity of the poor. Mr. Zineman's description of the process of manufacture is very interesting. Whole families are employed at the trade, and the secrets of the craft are handed down from generation to generation. Four men usually sit at a table, each with a gas jet in front of him, and the eyes are blown from glass plates and moulded into shape by hand. The colors are then traced in with small needles, no set rule being observed in the coloring, and as every man uses his own fancy no two artificial eyes, therefore, are exactly alike. The eyes are then sorted into lots according to color, all the different shades of blue, gray and black, right and left, comprising the different packages. In spite of this enormous assortment, peculiar shades in eyes are often met with for which perfect mates must be specially manufactured. Mr. Zineman secured agencies for a number of prominent manufacturers, including Mueller, and made contracts covering a period of years to take the entire output of several manufacturers. He was told that he placed the largest order for artificial eyes that had ever been received at Thüringen. As a souvenir of his trip there is now exhibited in the show window an unfinished eye on the stem, which was blown while he stood by. With these additional facilities they will be able to push this branch of their business more energetically than ever, so that even the poorest laborer may have these improvements to physical beauty within his reach.

Bow Contractor.

THE illustration below represents an implement for the use of jewelers and other mechanics for contracting watch bows or rings, and for bending strips of metal or other material into low or U form. The instrument works on the fulcrum and lever principle of the ordinary pincers. In its use the handle-arms are normally by the spring thrown apart, separating the jaws and moving the stud outwardly ; the material to be bent is placed across the end of



the jaws and between them and the stud, when by closing the jaws through pressure on the handle-arms the stud is drawn inwardly into the recess between the jaws and the strip is bent into the bow or U form desired.

The instrument is made in any size desired, and is equally efficient with heavy and light material. The device was patented June 10, 1890, by J. A. Robbins, Springfield, Mass., assignor to O W. Bullock & Co., of the same town, the well-known manufacturer of jewelers' and watchmakers' tools.

A BARGAIN IN JEWELERS' CIRCULARS.

Philadelphia, Pa., August 25, 1890.

I have the following numbers of your CIRCULAR, and would like to dispose of them at a low figure: No. 7, Vol. VIII.; No. 10, Vol. IX.; Nos. 8, 9, 10, Vol. XI.; all Vol. XII.; all Vol. XIII., except No. 1; all Vol. XIV. except Nos. 3, 5, 7, 9; all Vol. XV. except Nos. 1 and 2; all Vol. XVI. except No. 3; No. 1, Vol. XVII.; No. 9, Vol. XIX. FRED. F. COBB.

Silver and gold bands for the head are very popular among fashionable ladies, but the brass band makes more noise in the world—especially if it contains a bass drum and a bassoon.

THE OTHER SIDE OF LIFE.

An hour-glass is not necessarily a glass that an inebriate engages by the hour.

DO THEY RUN AT ALL?

EXCITED PASSENGER—Do these cars run on time?

PHLEGMATIC CONDUCTOR—No; they run on rails.

HE GOT A RAISE.

CHARLEY SILLIBOY—Mr. Duste, do you consider me worthy a slight increase of salary?

MR. DUSTE—A difficult question to answer, but I will see what I can do for you. You believe in the old adage "Time is money?"

CHARLEY—I do, thoroughly.

MR. DUSEE—All right, then; hereafter you may work twelve instead of ten hours each day.

QUARTS OF DIAMONDS OR DIAMONDS OF QUARTZ.

"I tell you, Knowles, the dressing at Saratoga this year surpassed the wildest dreams of Monte Cristo. I never saw anything like the ostentatious display of diamonds. Everyone had them, and collected they could have been measured by quarts."

KNOWLES—Crystalline quartz?

FROCADE, FERNAND & CIE.

In Paris: MR. BOOMER (of St. Louis, Mo.)—I would like to see Mr. Frocade.

CLERK—I iz grieved to zay zat Monsieur Frocade iz not in.

MR. BOOMER—Mr. Fernand will do.

CLERK—Monsieur Fernand iz gone to Marseilles.

MR. BOOMER—Well, tell Mr. Cie that I wish to see him.

EPICURUS IS OUT OF SIGHT.

"Ichabod," said the Sultan to his Grand Vizier, "order the cour servants to search the markets for the rarest of fruits and herbs; have my private cuisinier prepare repasts that in excellence have not been equalled since the days of Mahomet, the powerful; have my chamber resplendent with the rugs and laces of our finest makes; have thirteen maids with eyes of night and thirteen with eyes of sapphire ready at a moment's notice; and exercise your judgment to its bent to have everything ready for a grand and discriminating visitor."

"With pleasure, thou mighty son of a mighty gun."

"And, Ichabod, prepare for my couching with you these next two days, for I must temporarily relinquish my chamber."

"An unusual experience, thou mighty son; wherefore these preparations and discomforts?"

"Knowst not thou that a young drummer of a New York jewelry house is to visit me these next two days?"

THE DEARTH OF TRUTH.

'Tis true there is no truth on earth,
That Nature is by lies belated,
For though some women have real golden hair,
The many now must have it plaited.

THE MYSTERY SOLVED.

If while dressing your collar button falls out of the collar band upon the floor, do not waste your breath in swearing, but go out and buy a pair of double-soled boots. Then return to your room, put on your new boots and walk about the floor. When you hear a crunching sound you will know that you have found the button.

A VALUABLE FAMILY RELIC.

BILLIAMS—I have taken a fancy to that cane you sport, Gilliams. Would you sell it?

GILLIAMS—Wouldn't dispose of it for any consideration. It's an old family heirloom; my great-grandfather used to belabor my great-grandmother with it.

THIS IS NOTHING FOR AN IRISHMAN.

JUDGE—Mr. Donnerwetter here says, Mr. Sligo, that he found you in his coal box stealing coal.

SLIGO—Oi wus in the cool box but I wus not staling cool. Woo yer allow me, Jidge, to till me story?

JUDGE—Well, go on.

SLIGO—I live on the sicond flure, and yisterday while lookin' out the windy I feel out and down into the cool box. It was siven minutes past two.

JUDGE—How do you know it was seven minutes past two?

SLIGO—While I was turning around in me fall, I looked in the windy of Mrs. McCarthy who lives on the first flure and saw the clock.

JUDGE—Prisoner is discharged.

THEY TOLD THE TIME.

He loved the maid with passion rare,
And every night left not her door
Until the milkman made his morning rounds,
And in her stockings loud the clocks told four.

"SIMILAR LIKE" IT."

"A writer in the *Other Monthly* claims that woman has entered every field of industry," said Quericus; "still we never see nor hear of women watchmakers."

"There are none," replied Cynicus; "probably because so many are engaged in matchmaking which differs from the other but in one letter, and is far more pleasant and interesting to them."

ON DIT.

NOYES E. HOWELLS—Aw, Cholly, I hear you were at the pearl wedding last eve, of the De Suckettashes.

CHOLLY CHOLMONDELEY—I war; tame affar.

N. E. HOWELLS—Wot does the pearl wedding wepwesent?

C. CHOLMONDELEY—Chicawgo institution; thirtieth wedding.

THE FLUSH MADE HIM FLUSH.

GAZLEY—Fledgely must be quite well off with the world's goods.'

GAZZUM—I've never had that impression. Why do you think so?

GAZLEY—He showed me a handful of diamonds last evening.

GAZZUM—Do you mean it?

GAZLEY—Yes, I do; and he won the pot with them.

PINIONS ARE WINGS, BUT——

BOWLES—Mr. Stiffany, I would like you to fix the wings of this watch.

STIFFANY—Wings? I do not understand you.

BOWLES—Perhaps I haven't got it right. What are those appendages by which a butterfly is enabled to fly? Pin— pin—

STIFFANY—Pinions?

BOWLES—Oh, yes; fix the watch's pinions.

STIFFANY—Oh!

TRADE GOSSIP.

—In order to make room for their increasing material business, David F. Conover & Co., the well-known Philadelphia jobbers, are reported to be contemplating an addition to their store.

—Upon application, Blancard & Co., manufacturers of settings, galleries, balls, etc., 36 John street, New York, will send to any jeweler, three sample sheets of their latest designs in diamond mountings.

—In consequence of the recent heavy rise in the price of silver, nickel and copper, Rogers & Bro., the plated ware manufacturers of Waterbury, Conn., and 18 Cortlandt street, New York, have advanced the price of flat ware ten per cent.

—The fine initial rings manufactured by Odenheimer & Zimmern, 46 Maiden Lane, New York, are selling better than ever. The firm express their regret at any delays in filling orders, which may occur owing to the pressure of business,

—Business at the factory of the Elgin Watch Case Co. has increased so rapidly since starting up their new factory, that they are compelled to work part of their force nights. This speaks well for the goods turned out by this firm. Under the very able mana ement of Mr. Duncan this company is now well to the front.

—Hollinshed Bros., 806 Chestnut street, Philadelphia, state that their travelers now on the road are sending in most encouraging returns, while their mail order business is constantly on the increase. This is but the natural result of the policy of strict fair dealing and liberality, which they have adopted and adhered to from the start.

—A. N. Clark, Plainville, Conn., the well-known manufacturer of watch keys and tools, has produced something new in the shape of a key ring. It is of steel and is substantial. Upon request the manufacturer will be pleased to forward any dealer one of these rings with his name and address stamped upon it. This ring can be used as a sample in taking orders.

—Charles Jacques, 2 Maiden Lane, New York, whose stock of imported clocks is undoubtedly the most complete in this country, is exhibiting a line of English hall and mantel chiming clocks that cannot be surpassed in beauty and richness. Mr. Jacques also carries a complete stock of French and English clock materials, which is a great convenience to dealers.

—Lewis Bros., 41 Maiden Lane, are among the largest manufacturers of sterling silver necklaces in the trade. They also manufacture a full line of novelties in new and attractive designs. So well known have they become as tasteful and conscientious workers in silver that they are now receiving a liberal share of special orders, including designs and estimates for badges, and small wares of all kinds.

—Simpson, Hall, Miller & Co., Wallingford, Conn., have placed on the market this fall a very handsome embossed tea set of the richest and most expensive workmanship, which is exciting much favorable comment from the trade. Their usual extensive display of both hollow and flat ware is supplemented this season by many new designs. Both their New York and Chicago stores have recently been refitted in the latest style.

—It is thought that the Aurora factory can be started again this week, and the latest improved machinery has been bought for the purpose. While the force will be comparatively small at first, it will be increased gradually. The new owners are delighted with letters applying for positions. The former employees, in particular, are anxious to get back. Henry Cain is to be the superintendent. He has the reputation of knowing all that is worth knowing about managing a watch factory.

—The very latest departure in "Alvin ornamentation" is relief work on crystal glass by the electro deposit process, an example of which, a decanter, can be seen on another page. It is a veritable triumph of the silversmiths' art, and its successful accomplishment places this young house in the front rank of American silver workers. The same process is applied to cane and umbrella heads, producing the most grotesque and fanciful effects. Jewelers in the city this fall should make it a point to give the Alvin Company a call at their New York showrooms, 860 Broadway. It will be a revelation to those who have not seen this new ware.

—W. W. Woolfolk, Centralia, Mo., offers $100 reward for the recovery of the following property, which was stolen on the night of Sept. 23: 3 gold Waltham watches, Nos. 257836, 132148, 183755, 4-6 size Nos. 286398, 303270, 236639, 303325; 1 dozen ladies' chains, 1 dozen gents' chains, 8 dozen plain and set rings, 1 silver case with Columbus movement, 174902, full jewel, nickel; 1 hunting case, Elgin movement, 7 jewel; 25 gold and silver watches, number not known; 3 watches left for repair—1 chatelain silver, O. F; 1 gold, O. F., Swiss, old fashion; 1 gold-filled 11 jeweled Springfield.

—The suit of A. Bitner, and other stockholders, against the assignee and Philadelphia stockholders of the Lancaster Watch Company is now on trial. Briefly it was charged that the new corporation had been illegally formed, that the stock issued to the plaintiffs was worthless, and not of the full value to which they were entitled, and that the assignment was not valid, because it was alleged to have been made without proper authority. The application of the assignee for leave to start work at the watch factory has not been reached. These questions may not be decided by the courts for several weeks, but it will certainly be passed upon by the middle of November.

—The factory of F. H. Noble & Co., at Englewood, Ill., is, if anything, more rushed at present than at any time since starting. The firm have been compelled to work nights for the last two months, and it seems as though this state of things is going to continue. These exigencies have entirely prevented Mr. Kehl from getting away on an extended business trip. The business of this house has grown to such an extent that it has been found necessary to add additional machinery, electroplating machines, etc The firm sell to the jobbing trade only, and have a neat catalogue which will be sent upon application. Their office is at 167 Dearborn street, Chicago, Ill.

—Jewelers who handle musical boxes (and nearly all might profitably do so around the holidays) should note carefully the announcement of Lazarus & Rosenfeld, on page 3 of this issue. This house, whose showrooms are at 60–62 Murray street, has secured a large lot of musical boxes to sell on account of a manufacturer, and, as the whole lot must be closed out within a limited time, the prices quoted are astonishingly low. Such opportunities are rare, and retailers desiring to lay in a stock should call on the firm, or write for such boxes as they want, selecting the same from descriptive catalogue in the advertisement. Messrs, Lazarus & Rosenfeld also carry a very large line of bric-a-brac pottery, including Royal Worcester, Doulton, and a large variety of other makes sold at moderate prices.

—Last month a 40-inch telescopic objectif arrived in good condition at the factory of Alvan Clark, Cambridgeport, Mass. Its finishing will take about three years. It will then be set up in the still, crystal atmosphere of Southern California. Besides being the greatest light-gatherer among refractors, it will be the only one of the first class in the world's calm belt that parts the tropic zone from the temperate zone. The atmosphere of the first is pacific and placid in the main, subject to outbreaks of hurricane; that of the second is an uneasy congeries of swirls and swells. Between the two lies the still, vaporless calm belt where the new telescope should peer through a translucent void to depths of star-space hitherto unsounded. This consummation depends upon Mr. Clark's ability to shape the lens. His success can reasonably be hoped for.

—The great clock which is to grace the tower of the new marble building of the Penn Mutual Life Insurance Company in Philadelphia, Pa., is to be one of the curiosities of the city. It will possess a number of unusual features, and will be in some respects unlike any other clock in the world. The peculiar effects will be apparent only at night. Instead of having an illuminated dial, with dark hands, as most large clocks have, the face is to be dark, with enormous hands of light. The hands are to be made of glass, over an iron frame, and illuminated with incandescent lights to give them the appearance of rods of fire. A curious method of introducing the electricity into the hands without interfering with their movement will be adopted. The shafts on which they turn are to be used as conductors, the electric current being fed to them from copper brushes, adjusted so as to touch the shaft without creating much friction. The huge dial will be of marble, with the numerals, illuminated by electricity, chiseled through. Two hundred incandescent lights will be used. It is not yet known how far the clock can be seen and the time read by the naked eye, but it is supposed that it will be a long distance. The light is to be supplied from the private electric plant of the building. The clock is the production of the E. Howard Watch and Clock Co., and this fact assures us that it will be a success.

—Queen & Co., the Philadelphia opticians, have lately placed on the market a combination tool which will interest every optician because of its compactness and convenience. It consists of a durably made wooden frame on which are hung two grindstones, one coarse for quick cutting, the other fine for finishing the edges of lenses. A drop table arranged for jobbing is hinged to one end of the frame, and is supplied with all the small tools required for repairing and adjusting. The firm solicit correspondence regarding it.

—Undoubtedly the largest line of Royal Worcester ware in the country is displayed at theshowrooms of LeBoutillier & Co., 17 Murray street, New York. This firm make a specialty of importing this ware, and always have something new in the way of decorations and shapes, to submit to the inspection of dealers. The present stock in these particulars is a most salable one. Of Crown Derby, Doulton, Copeland, Pointon, Adderley, Coalport and fine English porcelains, Messrs. LeBoutillier & Co.'s stock is extensive and contains numerous new conceits. A line especially adapted to the coming season consists of novelties in china cabinets, specimen tables, etagers, etc., in bamboo, mahogany and rosewood. This house is sole agent for Trenton Belleek ware, a new and quick-selling line of goods. All jewelers visiting New York would find it greatly to their interests to visit the showrooms.

—The New Jersey Lamp and Bronze Works, of New Brunswick, N. J., and 91 Duane street, New York, have brought out a number of new ornamental bronzes that are of unusual artistic merit. The subjects are novel and extremely attractive, the more so, perhaps, because they leave classic ground and appeal for sympathy from that standpoint of homely, everyday life which everyone, whether learned or not, can understand. One of their latest designs represents a man spearing fish. It is a copy of a real French bronze, the design of which was taken from a painting by Rousseau, the celebrated French artist. The moment chosen for delineation is when the man, standing on the bow of the skiff, holds the spear poised awaiting a favorable moment for striking, his gaze being directed downward into the water watching the movements of the coveted prize. The modeling and pose are admirable, being lifelike and spirited, albeit suggesting controlled energy rather than lithe-ness and activity. This artistic piece of work, which is in Japanese bronze finish, is one of the finest the house has produced and will find a host of admirers.

—A veritable museum of fine art wares of the European contitinent is the showroom of Leon J. Glaenzer & Co., 80 Chambers street, New York. All available space of the spacious first floor of the establishment is filled with one of the finest and most extensive lines of onyx, marble porcelain and traveling clocks, gilt sets and regulators Several large rooms above are devoted to the display of perhaps the largest lines of Sevres and Dresden wares in the country. These wares come in plates, vases, tea cups, bouillon cups and bread dishes. All the designs displayed are new, and are surprisingly beautiful. The stock contains a large assortment of Dresden porcelain statuettes. The firm are carrying a large line of the exquisite Vernis Martin furniture in cabinets, desks, tables and corner pieces, and a line of fine silver-plated pierced or filigree hand mirrors, frames, jewel boxes, candlesticks, inkstands and trays, etc. This latter line is one of the novelties of the season, and will undoubtedly prove a success.

—A recent decision of the United States Court at Cincinnati under the Interstate Commerce law has given the commercial travelers ground for hope that the desired concessions on rates can be obtained from the railroads without amendment of the existing law. The judges hold that the Interstate Commerce law does not forbid discrimination, but only *unjust* discrimination, some concession or discrimination being essential in the conduct of every business. The purchaser of a mileage ticket is a wholesale buyer and is therefore entitled to special rates. In concluding the opinion the judges say : "The act to regulate commerce leaves the common carriers as they were at common law, free to make special contracts looking to the increase of their business, to classify their traffic, to adjust and apportion their rates so as to meet the necessities of commerce, and generally to manage their important interest upon the same principles which are recognized as sound and adopted in other trades and pursuits." This reinforces the CIRCULAR's views on this question of railroad fares. There is no reason whatever why congress should not grant the concession asked for if the matter is brought before them in its proper light—provided all citizens without exception are given the privilege of buying these mileage tickets.

—The goods which the Spencer Optical Manufacturing Co. have to offer jewelers and opticians for the coming holiday trade are of special interest. And yet it is almost impossible to enumerate them. Opera-glasses form a strong feature, and no larger line of opera-glasses or a more varied collection can be found in any house. So large is the trade of the Spencer Co. in "Audemair" glasses, and so extensive is the stock to meet the varying tastes that an opera-glass department, occupying about one-half of the capacious sales-rooms at 15 Maiden Lane has been established in connection with the house. The stock and variety of opera-glass holders are equally extensive—comprising holders in gold plate, oxidized silver, celluloid, etc., of unique and tasteful designs. Those with kid-covered clamps seem to be the leaders. In this holder the grip is positive, and for simplicity they cannot be surpassed by other holders. There are other new things the firm are introducing, but space will not permit us to mention them. It will be well for jewelers and opticians to send for their new catalogue of opera-glasses, "specials" on reading-glasses and opera-glass holders, circulars and price-lists of their new bar-spring eye-glasses, "perfected" bifocals and opthalmoscopes. A new book on "Visual Defects and their Corrections," by F. Ogden Stout, optician for the company, will shortly come from press. It is the object in this book to give a condensed and comprehensive explanation as to the proper use of the oculist's trial case for the correction of errors of refraction. Shrewd buyers will watch this firm.

—The amount of taste displayed now in the manufacture of lamps is marvellous. So great is the transformation this useful article has undergone that now it is a very suitable object to find a place in a first class jewelry store. Jewelers have lately recognized the merits of these wares, and are now handling them. Chief among those devoting special attention to this class of trade is the house of Edward Miller & Co., 68 Pearl street, Boston, and 10 & 12 College Place, New York. This house manufactures only lamps, and is therefore able to offer the jewelry trade an assortment which for variety and excellence is exceeded nowhere. Piano lamps, banquet lamps, magnificent table lamps of fine onyx, extension lamps—all the varied forms in which this necessary article is now made are seen here in patterns most unique and attractive, and in both the popular styles, antique brass and silver. A feature is the very large line of hand-painted decorations, both in cheap and fine patterns. Jewelers in search of handsome lamps should not fail to call at the New York store, when in the city. All the lamps made by this house are provided with the celebrated "Rochester" burner.

—The cut glass showroom of C. Dorflinger & Sons, 36 Murray street, New York, is a veritable Aladdin's Palace when the electric lights are turned on, and the soft radiance is reflected from the thousand facets of the beautiful specimens of the cutter's art which the showcases contain. One is almost tempted to question the supremacy of the diamond in observing the brilliant scene. Within these cases are to be found everything in the line of rich cut glass that the market affords—wine-glasses in all the different styles and cuts, including goblets, champagnes, sherries, clarets, colored hocks, wine-glasses and cordials; table ware of all kinds—such as celery dishes, bowls, ice cream dishes, bonbons, etc. The Messrs. Dorflinger manufacture the largest line of cologne bottles in the country, and in jugs, decanters and pitchers the patterns exhibted are legion. Two new and exceedingly beautiful triumphs of the glass cutter's art are shown this fall—"The Sultana," and "The Parisian," the latter a patented design, brought out by a continuous circular line, which forms a star, with a polygon in the center. The remarkable features of all this ware are the singular purity and color of the metal, as well as a faultless precision of cut.

—Opticians and jeweler opticians who were in New York enjoyed a rare treat the last week in September, when the celebrated oculist, Dr. Julius King, of Cleveland, delivered a course of practical lectures on fitting glasses, in one of the parlors of the Astor House The lecturer is recognized as one of the leading exponents of the science of optics in the United States. In his hands the subject becomes not only absorbingly interesting, but simple and intelligible to the ordinary understanding. It is this latter quality of Dr. King's instruction which more than anything else is needed by the retail jeweler, who wishes in the briefest possible time to get a fair working knowledge of the art of fitting glasses. The large number in attendance bore witness to this truth, many having come from a distance to hear the doctor's discourses. Every day several difficult subjects were brought before the class and examined, the lecturer keeping up a running commentary to the class meanwhile, after which discussion of the cases was in order. At the conclusion of the series, all the members of the class expressed regret that the doctor's stay in the city was necessarily so brief. Clifford J. King, of the Julius King Optical Co., returned from Europe on the *Majestic* last month, having investigated the optical business on the other side, and come to the conclusion that we are far in advance of the old world in this science.

—O. V. Cones, formerly of Danville, Ill., has bought out the establishment of J. Hanshalter, at Anderson, Ind.

—D. Chalumeau, manufacturer of diamond jewelry, 216 Fulton street, New York, has opened an office at 15 Maiden Lane.

—Day & Clark, 10 Maiden Lane, New York, have commissioned Phelps & Miller, 118–120 Sutter street, San Francisco, Cal., as their agents for the far West.

—John B. Yates, 191 Broadway, New York, who makes a specialty of all classes of American watches, has for some time past been accumulating discontinued watch movements of all makes, and is now ready, as announced in another portion of this issue, to furnish any movement desired, and which is unobtainable elsewhere.

—Charles Leo Abry, 41 Maiden Lane, New York, sole agent for the Vacheron & Constantin watch movements, which fit all sizes of Elgin and Waltham cases, invites the attention of the trade to these accurate and reliable timepieces. He will supply without extra charge, movements engraved with the firm name of the retailer.

—The Geneva Optical Company have never known so good a trade before at this time of the year. They will shortly introduce a novelty in opera glass holders. The clutch is automatic, very simple in construction, and will in no way conflict with anything at present on the market. A new imitation gold spectacle just brought out by this firm is having a ready sale.

—The new hand-shaped tag adopted by the Roy Watch Case Co. serves as a silent reminder to the jobber, the retailer and the consumer of the emphasized value of hand engraving, and as a guarantee from the responsible manufacturer that each case is so engraved. It is a business like way of saving argument and of maintaining the Roy case above competition from cheaper machine products.

—S. F. Merritt, Springfield, Mass., the well-known manufacturer of eye-glass hooks and chains, has been obliged to increase his facilities to meet the demand for his goods. Persistent and "catchy" advertising, coupled with Mr. Merritt's astonishing energy and the solid merit of his goods, has given a great impetus to this particular branch of manufacture all along the line. Now every jeweler handles eye-glass hooks and appreciates their value.

—Isaac C. Lewis has been elected president of the Meriden Britannia Company, to succeed the late Horace C. Wilcox. As is well-known, Mr. Lewis was one of the founders of the enterprise, and has always held some official position in the company. He was president for about twelve years from the organization of the concern, and was superintendent at the time of this last election.

—Jewelers are now handling little novelties and oddities that some years ago would have been considered quite foreign to them. One of these is that little necessity, the key ring and chain. Robt. H. Ingersoll & Bro., 65 Cortlandt street, New York, make a large line of these goods in silver and nickel, the ring known as the "Security," being of their own invention, and retail jewelers are advised to send for samples for this season's trade.

—Ostby & Barton, the well-known ring manufacturers of Providence, find themselves overcrowded with business and much pressed for room, The better to cope with the phenomenal fall increase they have put in electric lights throughout their office and factory, and are preparing to run nights until the very eve of Christmas. Mr. Barton, of the firm, has just completed a very handsome residence on Parade street, which he is now occupying.

—A valuable book to opticians and all ophthalmological students is "Errors of Refraction," published by G. P. Putnams' Sons, 27 West 23d street, New York. It is a practical treatise, and deals with the correction of errors of refraction by means of glasses. The author is Francis Valk, M. D., a well-known and reputable ophthalmogist. The book is handsomely bound, and typographically is all that can be desired. It contains numerous descriptive illustrations.

—John A. Riley, 860 Broadway, New York, has added several new patterns to his line of tiaras or Grecian fillets. It was a brave venture to place upon the market such a fine line of goods, but it has been justified by the results. From their introduction less than a year ago, a steady business has been done in them, and there is every indication that during the winter they will achieve a wide popularity. It is a reiterated statement to say that they are the finest things in hair ornaments that has been conceived. The forget-me-not brooches, scarf-pins, etc., which Mr. Riley placed in the market a short time ago have proved very successful. This conceit is one of the prettiest seen in a long time.

—Colonel Jesse M. Rutherford, the popular jewelers' auctinoeer, of 618 Chestnut street, Philadelphia, has just completed a very successful sale for Keefer & Kiehl, Lancaster. The Colonel is a hustler, and he is in constant demand, his services being required now in one section of the country, now in another. No auctioneer in in this special line of business can point to so long a career as he. This fact, coupled with his acknowledged talents for the auctioneering profession, makes his aid invaluable to those who are closing out business or reducing stock. The Colonel is open to inquiry, and from his large fund of experience, will with pleasure answer all questions that may be asked as to the needs and probable results of any proposed sale.

—The newly-fitted store at 13 Maiden Lane, New York, occupied by Willlam H. Atwater, sole agent for the E. N. Welch Mfg. Co. and Boston Clock Co., is at this season worthy the attention of everyone desiring clocks of all descriptions. Included in the large collection may be found the lowest priced as well as the higher grades. The cases are of onyx, marble, wood and metal, in many original and beautiful designs, all made at the factories of these companies, and are not excelled by domestic nor foreign manufactures. The movements are all made with great care, simple in construction and thoroughly reliable. The great demand for these goods compels the factories to run on extra time so that orders may be executed promptly. The present output of the plants is about 2,000 clocks per day.

—The Derby Silver Co., of Birmingham, Conn., have an announcement in this issue cautioning the retail trade against handling pirated copies of their patented designs. So popular have the patterns of the Derby Co. become, that several manufacturers have borne additional testimony to this popularity by bringing out exact duplicates of their goods. Suits have already been commenced by the Derby Co. against the offending parties, and a decidedly aggressive policy will be adopted to protect their rights. The Derby Co. appears in the market this fall with the finest line of hollow ware and novelties they have ever shown. In toilet sets their display is especially noteworthy for the variety of pattern and artistic excellence of design. They have recently enlarged and improved their New York showroom at 25 Maiden Lane, where a full line of samples can always be seen under the courteous direction of their agent, I. W. Cokefair.

—The manufacturers of silver novelties are fairly outdoing themselves this season. The Circulars' reporter was recently given the privilege of inspecting the fall line of one of the largest and best known makers of this class of goods, F. M. Whiting & Co., of No. Attleboro, Mass., and he was surprised at the variety of articles offered and the beauty and taste shown in the designs. One of their chief novelties this fall is the smokers' set, consisting of cigar holder, ash receiver, lamp and match holder, all beautifully chased or engraved, and resting upon a tray with the edge chased to match these articles. In tete-a-tetes, berry bowls, water and wine pitchers their new patterns are extremely rich and pleasing, and in stationery novelties also, such as pen racks, candle snuffers, ink wells, etc., their line is greatly enlarged and improved. A bon bon dish in particular was noticed for its graceful shape, and a beautiful floral etching that adorned its interior base. After the representative had looked over the stock Mr. Whiting produced some very pretty designs for prize cups and presentation prizes, with the remark that they were receiving a good deal of that sort of work to do, and had been very successful in its execution. "Special orders of all kinds are a specialty with us now," said Mr. Whiting in conclusion, "and our artists are in high favor for the originality of their work."

—Anyone who possesses the sense of the artistic would be enchanted in visiting the showrooms of Taylor & Brother, at 860 Broadway, New York. All available space in these spacious rooms is filled with an ever-changing stock of the latest productions of the art ware factories of Europe; perhaps not a day passes but what something new may be seen, and at the present season, especially, are displayed novelties almost too numerous to specify. A line of fine mechanical clocks representing an upright engine, and other apparatus attracts one's attention; then a line of unusually beautiful fancy toilet mirrors in a new style of make representing a fan, a horse shoe and ensigna of the track and other devices, with delicate real brass trimmings; then an assortment of unique smokers' sets made of nickled iron and designed in Japanese style; a large line of plated bronze library sets in plush cases, very attractive; a line of particularly odd Italian faience flower receptacles and bowls; and a large number of fine hall clocks. A novelty which engages attention is a yachting clock, combining a clock, barometer, thermometer and compass; the setting is in the form of an anchor with various insignia of the sea Dealers visiting New York should inspect this stock.

—George F. Kunz, with Tiffany & Co., has been elected corresponding member on mineralogy of the Chambre Syndicale, of Paris, —the powerful assocation of jewelers, silversmiths, lapidaries, and dealers in precious stones. The news of the honor conferred upon him was lately borne to Mr. Kunz by a letter from the president of that body, M. Achard.

—The Rogers & Hamilton Co., Waterbury, Conn., have devised a new packing box for sets and fancy pieces. It is in Japanese gold crepe, and, as it is imported exclusively by them, cannot be copied this year by other makers. Their hollow-handle knives and carvers in the popular Monarch pattern are packed in this way, the knives in half-dozens and the carvers in twos or threes as desired. This company has just issued a new folding pocket price list of the well known brands of plated ware they manufacture. Every retailer should send for one.

—The Mt. Washington Glass Company, New Bedford, Mass., are again increasing their plant by the construction of a new building 150x40 feet. The demand for their rich cut and decorated art wares necessitates this step and skilled artisans in this line of work are being engaged as fast as they can be found. The line of samples at their New York store, No. 46 Murray street, is very attractive. Few jewelers visit the metropolis without calling there, where they are sure to find something new each time.

—There is no invention of recent date in the line of novelties which is attracting more attention than the new registering coin bank designed to open only when a certain amount has been saved. The advertisement of Messrs. William E. Piaget & Co., on another page, calls the attention of the jewelry trade to the new and improved article which they are introducing. The Prudential Registering Bank is designed to receive deposits of dimes on one side and nickels on the reverse side. The frame of this bank is made in an artistic design and, being elegantly nickel plated, presents a very handsome appearance. The bank locks when the first coin is deposited, keeps an accurate registry of the money dropped into it, and yields up its treasure after $5 in nickels and $10 in dimes have been saved. The popularity of this idea in savings banks is attested by the ever increasing orders which are received by the manufacturers. It may interest watchmakers to know that William E. Piaget is the son of the late Henry F. Piaget who was known all over the United States for over 50 years as a skillful watchmaker and writer on mechanics and the construction of the watch.

—More and more the jewelry trade are coming to recognize the advantage of giving variety to their stocks by the judicious purchase of the latest and choicest makes of fancy pottery, bric-a-brac, cut glass, etc., which the market affords. McCarty & Co., importers, of 525 Broadway, New York, recognizing this fact, have ever since their inception in business devoted themselves exclusively to satisfying the wants of the jewelry trade. They deal only in specialties—choice bits of all the well known potteries, or entirely new varieties of fancy ware. Many of the goods they exhibit this fall are in advance of the general market, and will not appear in the regular trade channels until next year All their goods are selected with the greatest care, and will be found suitable for the decoration of homes and for wedding and holiday presents. One consideration, which should weigh to their advantage with the jewelry trade, is that their goods are not sold to crockery or department stores, so that the jeweler who patronizes them can feel sure that he is getting something that will not be slaughtered in the dry-goods stores. On page 39 of this issue they illustrate one of their new groups, to which the trade are referred, with a recommendation to call upon Messrs. McCarty & Co, when in the city, and see this fine array of importations for themselves.

—One of the most popular lines of jewelry at the present time is gold lockets. Of these goods James W. Miller, successor to Miller Bros. & Co., 37 Union Square, New York, has a large line on the market, heart-shaped and round, of various sizes, in Roman and polished 14 k. gold. In these lockets the joint, being inside, is not visible except upon concentrated scrutiny. Mr. Miller has prepared for the season a large line of moonstone lace pins, brooches; also enameled scarf pins in all the popular designs, horseshoes, hearts, etc., in unusually attractive combinations with precious stones. The line of goods for which this house has been famous for years, Masonic goods, of all orders, in sleeve buttons, lockets, charms, medalions, is, as usual, complete and handsome, as is the manufacturers' exclusive lines, opalized jewelry and cloisonne jewelry. An attractive line which Mr. Miller, who manufactures all varieties of gold jewelry excepting watch chains and gents' rings, offers, is spring bangle bracelets.

—Fowler Bros., 198 Broadway, have just placed on the market a very handsome line of Mexican onyx jewelry in rolled plate, having secured the exclusive right to manufacture that popular material in this form from the company recently organized to control the mines. The samples exhibited are strikingly beautiful, and as they are classed among the season's novelties will doubless have a large sale.

—The Sterling Company, silversmiths, Providence, R. I., to keep pace with the constantly increasing demand for their productions, have added to their plant much new and improved machinery, necessitating an extension of about forty per cent. to their present floor space. The company are now prepared to promptly fill the orders with which their appreciative patrons have favored them. The aggregate of orders now on file is very far in excess of that at the same season last year, but the added facitities will render their prompt and rapid fulfillment an easy task.

—The bewildering display of silver jewelry at the Gorham Manufacturing Company's New York store at Nineteenth street and Broadway, as well as the large volume of sales in that line of goods is evidence that the remarkable popularity which has favored silver jewelry during the past few months continues unabated. Among the apparently endless lines which the Gorham Company display may be mentioned an assortment of black, white and colored enameled flower brooches, bright and oxidized finished brooches, in single hearts, double hearts, horseshoes, fancy scrolls, heart and crown forget-me-not wreaths, and other designs; a line of scarf pins in design, horseshoes, horseshoe nails, animal heads, hearts, and every conceivable design, plain and enameled; rings, sleeve buttons, bracelets, buckles and other varieties of jewelry with the popular moonstone combinations, in round, tear, square, oval and other shapes, either securely set or pendant; hair pins following the same conceit; garter clasps with moonstone settings which allow the color of the ribbons to pass through producing a charming effect. In all these classes of goods the popular and pretty forget-me-not conceit is prominently and variously employed, always with the greatest possible effect.

—A problem that has for a long while been taxing the inventive genius of the jewelry trade has at length been solved by Wm. H. Peckham, 4–6 Liberty place, New York. Mr. Peckham has obtained a patent on machinery and process, by which, he claims, he can make a solid gold seamless plain ring, perfect in workmanship and without any additional cost over those made by the old process. To a representative of the CIRCULAR Mr. Peckham said: "Yes, after thirty years of experimenting and close study I have at last succeeded in doing all that I claim for my patents. I can now make a ring out of a solid piece of metal without any solder, and perfect in every way and at a cost that will insure reasonable profit. The advantage of my invention must be apparent to every retail jeweler. The ring can be cut at any place to change the size without danger of its breaking or giving way at any spot. These rings are not cast but are wrought out of solid pieces of metal. This process toughens the gold, thus enabling it to take on a higher and more permanent polish than rings made in the old way. I wish to emphasize the fact that I use absolutely no solder. I am now entering into arrangements by which I will be enabled to make these rings in large quantities, so that they will be within the reach of every dealer."

—The illustrated catalogue which the Derby Silver Company, Birmingham, Conn., have just presented to the trade is a very handsome example of what good taste and liberal expenditure can accomplish in the illustration of good goods. The work is prefaced by a well written address to the trade, emphasizing the increasing popularity of the Derby goods and their sterling quality and artistic merit. Accompanying the salutatory are excellent portraits of the officers of the company, to whose energy and business acumen is due the flattering position of the company to-day :—Watson J. Miller, president and manager; Thos. H. Newcomb, superintendent, and Wesley L. Clark, secretary and treasurer. The articles set forth in the following pages are too numerous to specify. Suffice it to say that all the articles within the scope of the silversmith are here represented, and in styles and patterns both new and unique. The Derby Company have lately won laurels in the trade for the originality and beauty of their designs. So generally conceded is the excellence of their goods in this respect that other manufacturers have not scrupled to copy their patented designs. This plain infringement of their rights the Derby Company propose to prevent in future, suits having already been begun against offending parties in a number of States. Dealers should be cautious in buying goods to see that no pirated designs find their way into their stock. At the New York office of the company, 25 Maiden lane, a full line of samples can always be seen.

—Among the dealers in town last month was Samuel Cohen, 181 Poydras street, New Orleans, who for the past twenty-five years has been located in that city.

—We take pleasure in announcing the engagement of Adrien G. Funck, treasurer of the Fidelity Watch Case Co., 11 John street, to Miss Selma Lilliendahl, of Stapleton, S. I.

—Josiah Cummings & Son, 109 Summer street, Boston, Mass., make a specialty of a steel sample trunk, that is perfectly adapted to the wants of the manufacturing and jobbing jewelry trade.

—The Pairpoint Manufacturing Co., New Bedford, Mass., are offering this fall a very large line of crystal glass ink wells in various shapes and sizes. The recent addition to their facilities has been none too great to meet the demand of the season's trade.

—A very little boy, last month, intruded into the household of E. I. Rogers, representative of Howard & Son, causing satisfaction to both Mr. and Mrs. Rogers, and affording occasion for expressions of congratulation from the former's many friends in the jewelry trade.

—A little pamphlet to hand, from the F. Kroeber Clock Co., shows several designs of cuckoo clocks, both wall and mantel, and trumpeters, both wall and mantel. These clocks have brass movements, which are less liable to get out of order than other manufactures.

—Ferdinand Fuchs & Bros. have now got their new factory at 808 & 810 Greenwhich street, New York, in full blast. The capacity of the factory for turning out work is very great, and they are now ready to fill all orders for their old customers (and new ones also) in short order.

—J. D. Johnson, a wholesale jeweler of Chicago, Ill., has rented a store at the corner of Michigan avenue and Main street, and will, on October 1, open, it is said, one of the finest jewelry establishments in the State. He has also bought a large farm near Laporte, Ind., and will make it his future home.

—Sympathy is extended to H. C. Bucklin, recently salesman for some years for J. T. Scott & Co., in the death of his wife, Mary C. Bucklin, which occurred on September 17. The deceased was a daughter of A. B. Van Cott, a one-time well-known jeweler of Milwaukee and Chicago, now of Madison, Wis.

—M. B. Bryant & Co., 10 Maiden Lane, have a novel way of furnishing their initial rings to the retail trade. The rings are shipped in neat plush-lined boxes or trays, each containing a dozen selected. This novel but business like idea has had the effect of largely increasing the sales of the popular "Bryant" initial rings

—Wm. E. Cross has opened a jewelry store in the Sanford block, 33 Market street, Amsterdam, N. Y. He has been in New York, buying a complete stock of jewelry, silverware, etc. Mr. Cross is a practical watch-maker, jeweler and engraver, and, being an honorable and upright young man, will no doubt get his share of public patronage.

—The W. C. Edge Co, 46 Green street, Newark, N. J., are turning out the popular "Quatrefoil" chain, recently patented, in large quantities to meet the demand. Necklaces, bracelets, vests, etc., are made in 14-kt., sterling silver, and best quality rolled plate. This latter form is a new departure, deemed desirable on account of the great popularity of the invention.

—Jos. A. Oudin, southern representative of the Towle Manufacturing Co., who, as stated in the last number of THE CIRCULAR, has been incapacitated from work through a tumor that has appeared in his throat, has somewhat recovered the use of his voice, and is now ready, in case of necessity, to exhibit a full assortment of his company's wares at New York hotels most convenient to buyers.

—The Waltham Watch Tool Co., Springfield, Mass., are now fully settled in their new manufactory at Springfield, Mass., where they have increased facilities for turning out the well-known "Hopkins" lathe, as well as the largely increased lines of small tools and specialties, which their improved machinery and enlarged quarters will enable them to turn out.

—Julius Wodiska & Co., 49 Maiden Lane, are selling large quantities of their motto fancy ring, recently patented by them. The mottoes, which are in English, French, German or Spanish, are concealed on a circular disk under the setting, and are brought to view by pressing a little spring at the edge of the setting. This little novelty has just enough sentiment and mechanical ingenuity about it to strike the popular favor.

—The Toronto Watch Case Co., of Toronto, Canada, have just issued a new price-list, dated September, 1890.

—Parson's Horological Institute, Laporte, Ind., during September received more students than during any other month this year, which is very unusual. A 16-horse power engine is being installed in the institute, which will furnish power and steam for heating all the different departments. A much larger room than heretofore for a library and reading room is also being fitted up. It is the policy of Messrs. Parsons & Co. to provide every comfort for their numerous students, and their spacious well-appointed institute is evidence that they have succeeded in their efforts.

—The Newark Watch Case Material Co., Newark, N. J., report largely increased sales of their patent Ajax Insulator, a sure protection against magnetism. This little safe-guard against the subtle electric fluid fits all the standard cases, and is so cheap that any body who carries a watch can afford one. Retailers will find this a good thing to exhibit in a show window, and discuss with their customers. It cannot fail to interest them The Ajax Insulator is marketed to the general jobbing trade, of whom it can be procured by the retailer.

—The F. Kroeber Clock Co. are showing a complete line of French onyx and marble clocks, with American eight-day movements. These clocks are furnished with eight different styles of imported dials. The company are also showing numerous select designs of this class of clocks, with French ornaments, and with top and side ornaments. All available space of the company's large salesrooms, at 360 Broadway, New York, is occupied by salable lines of clocks, particularly adapted to the demands of the coming season.

—If they are any in the trade who have not received a copy of the *New York Jeweler*, they should write for it The September number has sixteen pages, of the size of *Harper's Weekly*, and is replete with items of general interest to the average jeweler, and of particular interest to the close buyer who is looking for bargains Messrs. Myers & Co. quote therein Trenton watches at unheard of prices for an American watch, the firm having purchased the 1890 discontinued production of that company and are disposing of it to their customers at a very rapid rate. They say that, if the demand continues, the entire 40,000 watches will be sold within the next 40 days. The firm have an eye-opener in the way of nickel alarm clocks, at quotations that perhaps have never been offered before. They also make startling reductions in their material department in watch glass, etc., besides offering various bargains in discontinued and other watches. New designs in jewelry, and particularly in their new patent interchangeable initial ring are shown. The jeweler who does not procure a copy of this number misses a good thing.

—A call at the store of the Phœnix Glass Co., at 729 Broadway, New York, should be made by every jeweler visiting the city. Here he will find one of the most complete lines of fine cut glass, which has become a necessary and profitable adjunct of the jewelers' business, in the world. The company have an extensive and fully equipped plant for turning out this ware, the production including everything made in cut glass, salads, decanters, ice-cream sets, cologne bottles, flower vases and bowls, 6-inch nappies for individuals, 8-inch nappies for parties both in round and crumpled designs, sugars and creams, handle baskets for jellies and bonbons, ice tubs, oil and vinegar bottles, handle nappies, ice cream dishes and silver-plated knife with cut glass handle, silver-plated salad spoons and forks with cut glass handles, punch bowls and ladles with cut glass handles, and numerous other utensils and ornaments. Prominent features of the company's stock are extensive lines of the popular water bottles and claret and champagne pitchers. The metal used in the manufacture of these articles is of the purest quality, and the variety of cuttings seems to be interminable. At the Exhibition of American Art Industry held last year in Philadelphia, the company were awarded a gold medal. The following is quoted from the published report of the judges: "In the exhibit of heavy cut glassware, the exhibitors were the Phœnix Glass Company, and Thomas G. Hawkes, of Corning, New York. There were also miscellaneous pieces exhibited by R. J. Allen, Son & Company, of Philadelphia, some of which were made by the Dithridge Glass Company. While the exhibit of the Phœnix Glass Company was the only one in competition, the judges made a careful examination of all pieces exhibited, and came to the conclusion that in purity of metal, brilliancy of color, and general excellence, the Phœnix Glass Company exhibit is superior to all the others." The company also manufacture a beautiful line of lamps adapted to the jewelry trade.

—The gold-beaters of New York, Chicago, Philadelphia and Boston struck last month for an increase of pay, on account of an expected increase in the tariff on gold and silver leaf. The McKinley bill contemplates a 33% increase in the tariff, and the workmen, believing that a portion of the benefit from this rise should accrue to them, made a demand for a 20% increase of wages and the adoption of a uniform scale. The demand was conceded by the employers, and harmony was soon restored.

—Day & Clark, 10 Maiden Lane, New York, are producing for the season a line of handsome pendant necklaces that, for beauty and fine workmanship, compares favorably with anything of the kind in the market. This is but one line of the many produced by this house. An inspection of the rich display of bracelets, brooches, lace pins, hair pins, etc., is sufficient to convince the observer that the same care and taste is exerted in each of these articles as in the first mentioned. A beautiful class of goods shown by Day & Clark are curb and link bracelets, with diamond ornamented centres.

—L. Straus & Sons, 42–48 Warren street, New York, have imported this season the largest stock of fine Carrara and Castellani marbles that has yet come to this country. It embraces over 150 different models, many of them executed by Italian and French sculptors of note. Every first-class jeweler needs one or two of these pieces in his store about holiday time, and there is no finer assortment to choose from than can be found here. The Messrs. Straus have also made extensive importations of fine onyx clocks and tables, real bronze-mounted vases and hall clocks, in addition to their mammoth assortment of bric-a-brac and pottery of all kinds.

—As they announce on another page of this issue, J. T. Scott & Co., 4 Maiden Lane, New York, have devised and copyrighted a chart for grading their stock of diamonds. They have arranged this stock into twelve grades, each designated by a letter or figure, which will be furnished with each piece in addition to the regular numbers. Messrs. Scott & Co. are deserving of much consideration for the devising of this system, for by it their customers will have the benefit of the importers' judgment, which should help them in the purchase and sale of diamonds from their stock. It is the intention of this firm to devote more attention in the future, to their diamond business; they have completed arrangements whereby they are enabled to import direct, and give their customer the benefit of the lowest prices. The stock of fine diamond jewelry they are at present displaying is complete and unusually attractive, and contains numerous new patterns in the various lines.

—Probably the thinnest watch ever made is on exhibition in the window of W. W. Wattles' jewelry store, Pittsburgh. It belongs to Ludwig Grosse, a well-known artist and musician, who secured it while on a recent visit to Germany. The watch is not over an eighth of an inch thick, including glass and case, both of which are moderately heavy. Inside the inner case the works themselves, not thicker than a piece of cardboard, lie and tick away the hours steadily and accurately. It was made for the Duke of Saxony by one of the most famous jewelers, in Germany, about forty years ago. It was afterward presented by the Duke to Franz Liszt, the famous composer, who carried it for a number of years, and left it at his death to his favorite pupil, Friedheim. The latter was a young man of convivial habits, and was frequently in need of ready cash. During one of these straightened periods he pawned the watch with a friend, who, after keeping it for a number of years in hopes it would be redeemed, finally sold it to Mr. Grosse, when he was in Germany last summer. The outside case of the watch bears the coat of arms of the Duke of Saxony, inlaid in enamel. The engraving, both on outside and inner case, is exqusite. The gold in the case is of the finest quality, and the ganze-like works are set with the rarest kind of tiny jewels.

Among the Watch and Clock Companies.

—The Otay factory now employs about 100 hands.

—The demand for Otay watches is said to be a long way ahead of the supply. A new stock-room is being made, large enough to hold a six month's supply of material.

—Master-mechanic George Krieger, of the Otay Factory, has invented an automatic engraving machine, with which it is claimed 120 letters per minute can be executed.

—The Otay watches have now a regular market in the Hawaiian Islands, Japan, Central America and Mexico. The company have made a watch for President Diaz, of Mexico.

—The Rockford Watch Company intend to add in the Spring 140 feet to the north wing of their factory.

—It is said that it requires over 13,000 pounds of fine steel to supply the annual consumption of the mainspring department of the Elgin watch factory. There are nearly a hundred springs in a pound.

—The new addition to the Hampden watch works at Canton, O., is being rapidly pushed toward completion. When finished, this will add greatly to the already magnificent proportions of the Dueber-Hampden plant.

—At the American Waltham watch factory, a set of watches numbered 5,000,000 to 5,000,010 are now on the road to completion. They are first quality, 16 size, and will be finished with unusual care. They will be finished about the first of next year.

—The Perpetual Watch Movement Company filed corporate articles on September 15. Place of business, Des Moines. Capital stock, $1,000,000. The board of directors are: G. W. Marquardt, H. E Teachout, L. A. Wilkinson, W. S. Roberts, S. R. Dawson, W. W. Fink. A. T. Hull, G. L. Eason, R. M. DeWitt and Isaac Brandt.

—The new Railway Silverine Watch Case, lately placed upon the market by the Dueber Watch Co., has created a furore among the trade. The superior finish of this case, as compared with everthing else heretofore attempted in the way of a metal watch case, is conceded by all.

—H. J. Cain will be superintendent of the rejuvenated Aurora Watch Factory, and Chas D. Rood president of the company, with the four other purchasers, will constitute the board of directors. There is an abundance of capital behind the concern, and with such an able superintendent the success of the company is assured.

—On September 17 a fire originated in the wood-fibre department of the clock factory of Edw. P. Baird & Co., Plattsburg, N. Y. After two hour's hard fighting, the flames were extinguished. The loss of the firm is about $3,000, and is fully covered by insurance. The principal damage was to the wood-working machinery and belting. The hydraulic machinery in the wood-working department escaped injury, and operations was resumed in that branch of the business in a few days after the occurence.

—If one wants to see what manufacturing establishments do for a city he should take a stand near the watch factory before the whistle blows at six, and see Father Bunn's boys and girls coming out. They are no mere machines either; not 800 or 900 automatons to go and come, work and rest, at the beck and call of a master, but bright-eyed, deft-fingered, intelligent and pleasant-faced young ladies, active, good-looking, energetic, and not less intelligent young men; men and women who have the skill and independence to make their own way in the world. They would see, by following these people, how they may ramify all through social life; fill their places and stations in the churches, societies, parties, and interests, which go to make up the great aggregate.—*Springfield* (Ill.) *Monitor.*

—Just for a flyer, the Hampden Watch Factory turned out 870 movements as their product on Thursday, September 11. This is their banner day of the season in the way of production, but the stakes are set for still larger quantities in the near future. When it is understood by the trade that the Hampden Watch Company make but very few 7-jewel goods, their production being mostly in the way of 15-jewel adjusted watches, it will readily be seen that it is quality not quantity which will tell in the long run. The trade is rapidly recognizing the fact that, to obtain the best results in the way of time from American made watches, it is necessary that they should be fully jeweled, and that a watch with 17 jewels is bound to give better time than one with 15 jewels. The Dueber-Hampden Company, recognizing this fact, will soon have upon the market a new line of adjusted watches, all of which will have 17 jewels.

—The electric light plant in the American Waltham Watch Factory, when completed, will be not only one of the largest, but best fitted up isolated plants in the country. The capacity of the dynamos will be about 4400 incandescent lights, which will give all the light needed for years to come. The compressor and pumps, which have been located in the dynamo room proper, have been removed to the river end of the enlarged room, which gives ample room for the electric lighting plant, at the easterly end of the department. The dynamos, eight in all, will be driven by a 300-horse-power Ball engine. The shafting and clutches are so arranged that not only will the engine drive the dynamos, but if any accident should happen to the double engine now in use at the factory, the electric light engine can be made not only to furnish the light but power to run the factory as well; this is done by friction clutches.



VOLUME XXI. NEW YORK, NOVEMBER, 1890. No. 10

THE JEWELERS' CIRCULAR
AND
HOROLOGICAL REVIEW.

OFFICIAL REPRESENTATIVE OF THE JEWELERS' LEAGUE, THE NEW YORK JEWELERS' BOARD OF TRADE, AND THE JEWELERS' SECURITY ALLIANCE.

It is also the Recognized Exponent of Trade Interests.

A MONTHLY JOURNAL DEVOTED TO THE INTERESTS OF WATCHMAKERS JEWELERS, SILVERSMITHS, ELECTRO-PLATE MANUFACTURERS, AND THOSE ENGAGED IN THE KINDRED BRANCHES OF ART INDUSTRY.

SUBSCRIPTION.—To all parts of the United States and Canada, **$2.00 per Annum,** Postage Paid. To all Foreign Countries, **$3.00 per Annum,** Prepaid.

☞ *All communications should be addressed to*

THE JEWELERS' CIRCULAR PUBLISHING CO.
189 BROADWAY, NEW YORK.
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☞ *Advertising rates made known on application.*

Subscribers will do a favor by notifying us at once upon the non-receipt of any number of THE CIRCULAR. The mails will occasionally miscarry, but we will cheerfully make good Uncle Sam's little shortcomings by sending another copy to replace any missing one.

GOSSIP OF THE MONTH

☞ A full Index to Advertisements and a Table of Contents will be found on Page 5 of this issue.

THE peculiar watch-distemper which recently afflicted the New York *World* has spread to other newspapers throughout the country, and the blatant cry of the watch-fakir is heard in the land. The "dear public" are informed that they have been imposed upon by swarms of watch sharks that infest the land. They need protection, and the high and mighty magnates of the press have determined to go on a philanthropic crusade against this host of imaginary enemies who are despoiling the people. They disclaim all selfish motives, and pose as public benefactors. It is the old, old story—always heard when there is shearing to be done. Watch-fakirs are, indeed, too numerous in this country to day, That they are so is due largely to the great newspapers, who have been their aiders and abettors, by publishing advertisements intended to defraud and deceive. But that the newspapers would come out so openly and join the ranks was hardly to be expected. The "dear public" can not be long deluded by this clap-trap scheme. They begin to comprehend the situation, and, after indulging in much verbal twisting and turning and captious rhetoric in the effort to justify their course, the apostles of the new crusade against windmills are weary of the fake, and are sighing for rest. Meantime people of sense are buying watches where they always have bought them—of established jewelers, with knowledge of the business and reputations at stake.

*** *** ***

Do you handle Cut Glass? Inform yourself about it. *See Page* 33.

*** *** ***

WE WOULD specially commend to our readers for perusal the article on cut-glass, presented in this issue. We have been led to investigate this industry by its growing importance, and the adaptibility of the beautiful ware to jewelers' use. There is no fitter side-line for jewelers to handle than cut-glass. It is very salable, yields a good profit, and, aside from these considerations, has striking decorative features that render it peculiarly appropriate for a window display, or for a separate table dressed out tastefully in white or cream-colored velveteen. Possessing many of the characteristics of rich jewels in its brilliant prismatic hues, it imparts some of its own lustre to all the surrounding objects. The cut-glass manufacturers are looking to the jewelry trade to market their goods. They certainly deserve well of the trade, for in the short space of a decade they have placed themselves at the head of the whole world in this line of manufacture.

*** *** ***

Optical business pays. Read our Optical Department and you will see.

*** *** ***

ONE of the chief causes of regret in examining the record of the Fifty-first Congress thus far is its failure to pass the Torrey Bankruptcy Bill, a fair and comprehensive measure, which has received the general endorsement of the merchants of this country. The opposition to it, in the face of this strong unanimity on the part of those directly interested seems unjustifiable, and must ultimately give way before the rising tide of opinion. To this end protest should be entered at once. At the request of the Chicago Jewelers' Association we reprint in this issue a public letter written by a well-known Chicago merchant, and published in the *Tribune* of that city recently. It is an able plea for the bill from the standpoint of the

practical merchant, and the writer exhorts merchants generally to lend their influence towards its passage. All corporate bodies, guilds and associations in the trade are advised to petition Congress, or bring pressure to bear upon individual members of that body wherever possible.

*** *** ***

IN THE various trade centers of the country jewelers are organizing against watch-clubs. The decision of the Cincinnati court in the case against Russell Brothers is still fresh in mind, and now Philadelphia is agitating the subject through her aggressive organization—the National Retail Jewelers' Protective Association. This is a good move. By exposing all fraudulent schemes of this kind jewelers will guard their own interests, and at the same time serve the public. Many of these clubs are lotteries pure and simple. But all are not alike. Some of them come within the limits of legitimate business enterprise, and therefore cannot be molested. Honestly conducted the club system has increased the trade of many a jeweler, and is not to be indiscriminately condemned. The abuse of a thing is no argument against its right use.

*** *** ***

Make your windows attractive. The holiday harvest is at hand.

*** *** ***

THE wisdom of the prevalent custom of marking prices in show-windows is open to dispute. It draws the attention of the purchaser too much to the mere price of the articles, and incites his curiosity to investigate further. He sets out price-hunting, visiting store after store, and airing his knowledge of the subject. Jeweler No. 2 is thrown into a panic by his well-posted visitor, and thinks his only salvation lies in underselling his competitor. He cuts the price, and the consequence of this foolish policy is ultimately to wipe out the profit on the article so ticketed and black-list it for the whole local trade. It may be set down as a rule that the continual quoting of prices, and comparison of the same with those of other dealers or other makes, which many storekeepers thoughtlessly indulge in, is a mistake. The salesman should rather bend his energies to impress the intending purchaser with the beauty and merits of his wares, rather than their cheapness. Price is a secondary consideration. Let the window display be made to please the sense of the passer-by, rather than to instruct him in prices.

*** *** ***

Don't overlook "The Other Side of Life." Page 106. It is spicy and bright, and will amuse you.

*** *** ***

THE October number of our bright little contemporary, *The Waterbury*, points a very striking analogy to the old fable of the fox and the grapes—in the present attitude of the watch-faking newspapers toward the Waterbury watch, and illustrates it very aptly in a cartoon on its title-page. Grapes out of the foxes' reach always are sour.

*** *** ***

ASSISTANT-SECRETARY SPAULDING, of the Treasury Department, has issued a circular to officers of the customs and others, calling attention to Section 7 of the new tariff law, providing that on and after March 1, 1891, no article of imported merchandise which copies or simulates the name or trade-mark of any domestic manufacture or manufacturer shall be admitted to entry at United States custom-houses. In order to aid the custom-officers in enforcing this prohibition, it is provided that a domestic manufacturer who has adopted trade-marks may require his name and residence and a description of his trade-mark to be recorded in books kept for that purpose in the Treasury, and may furnish to the department fac-similes of such trade-marks. Application should be made, giving the names of the ports to which the fac-similes are to be sent. A sufficient number of fac-similes should be forwarded to enable the department to send one copy to each port named in the application. No fees are charged for recording.

—In New Haven, Conn., recently, a clever thief took advantage of the general custom among jewelers of hanging repair watches in their windows with names and dues attached, and succeeded in getting away with a valuable watch. A messenger called with an order purporting to be signed by the owner of one of the watches that were hanging in the window, all ticketed and ready for the owners to call for them, and paid over the amount due for the repairs. The jeweler allowed the messenger to take the watch, but learned shortly afterwards that the order was forged. It was too late to recover the timepiece, but it is not too late for other watchmakers to profit by this experience and cease to hang repairs in the window, or at least, to deliver no watches upon written orders.

*** *** ***

THE revised tariff schedule, which went into effect on October 6th, does not affect the jewelry and kindred trades to any great extent. The increase of the duty on jewelry to 50% is regarded as an unnecssary measure, but likely to work little hardship to any branch of the trade. The greatest source of confusion thus far is found in the varying duties levied upon imported clocks, which are assessed at from 30 to 60%, according to the material of which the cases are made. The duty is now advanced on clock movements of brass and steel to 45%, and on cases manufactured of marble or onyx to 50%. Cuckoo clocks and regulators are rated under the metal schedule, now 45%. French clocks of marble or onyx cost about 15% more than they did before the increase, for a clock the value of $10, with the addition of the old tariff of 30% would cost $13, but now, with a tariff of 50%, it will come to $15, or 15$\frac{1}{10}$% more. The tariff on bronzes has advanced from 30 to 45%, and on bronzes with porcelain mountings from 30 to 60%. In consequence of this confusion prices have been much shaken, but a tendency toward advance has already shown itself, with the prospect of prices ruling from 10% to 20% higher within the next two months.

Custom-House Statistics.

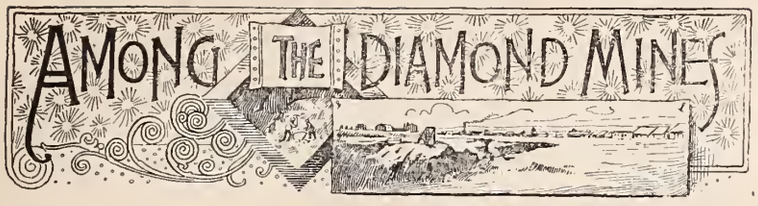
THE report of the Bureau of Statistics of the Treasury Department on Exports and Imports for the month of August shows the following figures of interest to the jewelry trade:

Exports of domestic merchandise for the month ending August 31—Clocks and parts, 1890, $106,833; 1889, $90,616. Watches and parts, 1890, $41,122; 1889, $17,150. Jewelry and manufactures of gold and silver, 1890, $56,677; 1889, $39,901. Plated ware, 1890, $29,946; 1889, $36,937.

Exports of domestic merchandise for the eight months ending August 31—Clocks and parts, 1890, $825,542; 1889, $845,573. Watches and parts, 1890, $192,110; 1889, $124,508. Jewelry and manufactures of gold and silver, 1890, $477,195; 1889, $756,259. Plated ware, 1890, $266,077; 1889, $369,820.

Imports of foreign merchandise for the month ending August 31—Diamonds, rough or uncut, including glaziers' diamonds, 1890, $15,660; 1889, $4,904. Clocks and parts, 1890, $48,739; 1889, $39,791. Watches and parts, 1890, $150,911; 1889, $128,684. Jewelry and manufactures of gold and silver, 1890, $156,569; 1889, $104,417. Precious stones and imitations not set, 1890, $1,703,971; 1889, $1,148,763.

Imports of foreign merchandise for the eight months ending August 31—Diamonds, rough or uncut, including glaziers' diamonds, 1890, $228,995; 1889, $132,414. Clocks and parts, 1890, $218,991; 1889, $188,074. Watches and parts, 1890, $1,070,207; 1889, $990,549. Jewelry and manufactures of gold and silver, 1890 $1,028,484; 1889, 777,509. Precious stones and imitations not set, 1890, $9,475,075; 1889, $8,241,868. The proposed changes in the tariff may have had the effect of increasing imports in some such lines, such as clocks and jewelry.



[From Our Special Correspondent.]

Pretoria, South Africa, Sept. 20, 1890.

The monthly output of gold from the Transvaal Fields is steadily on the increase. Last month the yield was 42,865 ounces. This is the largest monthly return on record, but will almost certainly be greatly increased before the end of the year. The anticipations of a marked increase are founded upon a considerable augumentation in milling power, as some 350 additional stamps will soon be at work. The properties on which the greater number of these new stamps stand have been in course of systematic development for nearly two years. It is not too much to expect that, when they come into play, they will increase the monthly output by 15,000 ounces. The highest estimate places the yield for December at 60,000 ounces—the lowest at 50,000. Those who strike a mean between the hopes of the optimists and the fears of the pessimists will probably not be wide of the mark. The new year certainly ought to be commenced with prospects of these fields turning out not less than two and a-half millions worth of gold before its end, and this will be no bad account for our infant industry to give of itself after all.

Debris washing at Kimberly continues to offer remunerative employment to many persons. Some hundreds of men are making an average of £5 each per week by cradling and washing out the diamonds left in the abandoned soil, locally known as "tailings," of former days. In the early times the appliances for recovering diamonds from the yellow and blue ground were primitive and crude, and there can be no wonder that many valuable gems escaped notice, and have laid for years in what until lately have been regarded as valueless and certainly unsightly heaps of debris. Extensive buildings now cover spots formerly used as depositing sites for the tailings, and it is not improbable that beneath the basement floors lie many gems. Much of this debris, too, was used in the making of roads and streets, and the finding of a diamond occasionally in the thoroughfares gives strength to the supposition that the material contains a few undiscovered stones. The I. D. B. fraternity of course find the debris washing business a fine means to their end. It is easy for them to wash a few loads of debris, and "find" extraordinarly well. The detectives are presented with another difficulty in this connection.

Diamonds continue to be found in the Free State and the Transvaal, and thousands of persons cling to the belief that mines as productive and valuable as those of Griqualand West exist in this country. Much capital and effort have been expended in prospecting but with unsatisfactory results. Small stones have been found a few feet beneath the surface, and the indications were of diamondiferous soil. Excavation to lower depths has, however, failed to fulfil expectations. Near Klerksdorp in the Transvaal, fully one hundred miles from Kimberly, ever 300 diamonds have been found within a narrow area, and preparations are being made for a systematic sinking.

The only places outside Griqualand West, however, where diamond-mining presents the form of a settled industry are Jagersfontein and what are known as the River Diggings. The latter are on the Vaal River, about fifty miles from Kimberley. At the River Diggings in the early days there was a large population, mostly residing in tents—on the discovery of what are now known as Kimberly and Duoitspan, and subsequently Bultfontein and De Beers. However work at the River was neglected, and has been carried on fitfully ever since. A few men have been engaged there for years and some have done well for themselves, but the small population may be termed a floating one. The diamonds, which are of the first quality, are found on the banks and in the bed of the river. Jagersfontein, about eighty miles from Kimberly, is in the Free State Republic territory. There are several mines in the district which, half-a dozen years ago, was very prosperous. Too sanguine opinions, unexpected falls of reef, increased working expenses, and diminution in the value of diamonds, however, led to a depression from which the place is only just recovering. The stones found in Jagersfontein mine are of a superior quality, and usually realize higher prices than the products of Griqualand West. Persons of experience maintain that, with improved and more economical methods of working, the district may be made to profitably yield 100,000 karats per month.

The unofficial value placed upon the export of diamonds from Kimberley during the month of August is £344,390. Since the amalgamation of the four great mines the output can of course be regulated at the caprice of the Directorate of the De Beers Mines, which is the name assumed by the powerful corporation.

Products of the American Watch Co.

One of the handsomest pamphlets ever distributed to the jewely trade is the "Products of the American Waltham Watch Co," issued by that company through their general agents, Robbins & Appleton. It consists of thirty-two large pages of rich, heavy-plate paper, bound in a pretty straw-colored cover. The engraving of the illustrations contained in the book, and the press-work being perfect the letter-press matter is as readable as it is mechanically possible to be. Regarding the "Products," it has been produced as a catalogue of the company's goods, and is without doubt the largest and most comprehensive publication of the kind ever produced by any watch company. It is intended for the entire jewelry trade, and any retailer will obtain one upon application accompanied by business card. The second page of the pamphlet is devoted to a beautiful engraving of the immense works at Waltham, Mass., while the next page gives interesting points concerning the capacity and output of these works, and other commercial information. The next fourteen pages are devoted to illustrations and descriptions of all the different movements manufactured by the company, while the following three pages are given up to their hunting and open-face lever-setting chronographs. To the company's celebrated silver cases six pages are devoted. Here are displayed some of the finest executed and most artistically designed cases now on the market; the workmanship of the well-defined figures is perfect. Two pages of Waltham watch-dials are displayed, and the last page contains illustrations of the company's trade-marks—28 for silver and 11 for gold. Each figure is numbered and described, but no prices are given. The retailer will thus appreciate the value of such a book, and should not hesitate in sending his card for it. Accompanying the work is a separate circular announcing the issue of "No. 40," a new 18-size, non-magnetic, adjusted, jeweled movement, adapted for use by employees of railways, as fully stated in another part of the number.

Flemington, N. J., October 21, 1890.

I cannot afford to do without The Circular; it is quite a help me in my business. S. L. Hart.

HE SHOULD LIVE IN KENTUCKY.

Col. Blood—A man in Virginia has a peculiarity of the eyes by which he sees every object multiplied nineteen times.

Col. Todd—How he must appreciate a glass of whiskey.—*Smith, Gray & Co.'s Monthly.*

Mt. Washington Glass Co.

New Bedford, Mass., U. S. A. New York Store, 46 Murray St.

HEADQUARTERS IN AMERICA FOR ART GLASSWARES.

RICH CUT AND DECORATED.

"DON'T BE TOO FRESH"
USE THE NEW TOMATO
SALT OR PEPPER

BUY ME FOR ALL SEASONS



THIS LITTLE BEAUTY
FOR SALE BY



The Latest "PURITAN" Design



FOR SALT OR PEPPER—
LARGER SIZE FOR SUGAR.
BOTH SIZES MADE WITH UNPERFORATED CAPS FOR BON-BONS.

FOR EASTER and HOLIDAYS and EVERY DAY of the YEAR.

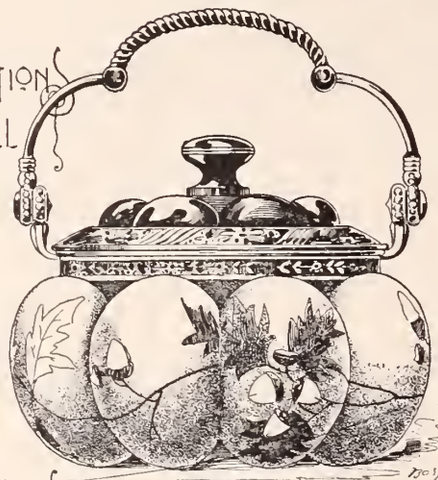


IMPROVED—PATENTED—

THE SALT OF THE EARTH,
SOLD ALL OVER THE EARTH,
AND IN THIS CITY BY —

ASSORTED DECORATIONS
IN PERMANENT ENAMEL
COLORS & GOLD

COVERS
QUADRUPLE PLATE
OLD SILVER FINISH
LACQUERED



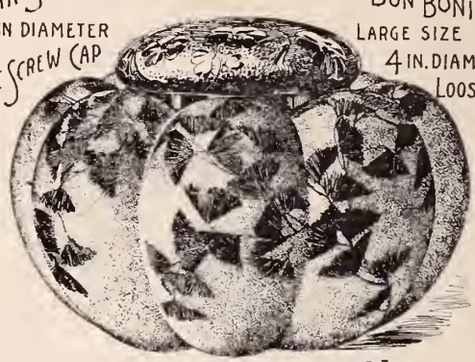
Height to top of handle 5½ inches

FOR MARMALADE.
SUGAR.
BON BONIERE.
JEWELRY.
OR ROSE LEAVES

TOMATO SUGAR SIFTER
4 IN DIAMETER
DOUBLE SCREW CAP

EMBOSSED CAP NEW.

TOMATO.
BON BONIERE.
LARGE SIZE
4 IN. DIAMETER
LOOSE CAP.



ALSO A SMALL BON BON SAME DESIGN, 2¾ IN DIAMETER.
PATENTED.

Ribbed Pickle Jar

BAIL DETACHABLE

Artistic Cover Embossed.

RICH DECORATIONS IN ENAMEL AND RAISED GOLD VITRIFIED



6½ Inches to top of handle

Watch us for Novelties! Something New each week,

Low Prices. High Quality.

N. B.—Our traveling salesmen carry a complete line of samples. If you desire to be informed when they are in your vicinity, please let us know. They visit the principal cities, some one of which will be easy of access for our friends in the smaller cities and towns.

Rich Cut Glassware,
Fine Decorated Shades, Lamps, Vases, etc., etc.
The Celebrated Royal Flemish and Albertine Wares.
The world-renowned Egg and Tomato Salts,
Peppers and Sugar Sifters.

MT. WASHINGTON GLASS CO.,

New Bedford, Mass., U. S. A. N. Y. Store, 46 Murray St.

Headquarters in America for Art Glassware.

AMERICAN CUT GLASS.

HOW MANUFACTURED AND WHO MANUFACTURE IT.

AMERICA to-day is the home of the cut-glass industry of the world. There is probably no manufacturing industry in the country that furnishes a better illustration of the remarkable progress we have made in the art trades. Twenty-five years ago there was very little of the rich cut-glass such as delights our eyes to day made in this country. England was then the seat of the industry. Taste here was far too primitive to admit of our people indulging to any great extent in the imported luxury. In the past two decades, however, all this has changed. The discovery, about twenty years ago, of the wonderful deposit of sand in the Berkshire Hills, near Lenox, Mass., the finest in the world for the production of rich cut-glass, and the migration to these shores of large numbers of skilled French and Bohemian glassblowers who were attracted by the higher wages to be obtained here, gave a great impetus to the cut-glass business. Factories and cutting shops sprang up in different parts of the East, and with the rapid growth of refinement and taste among the people, the demand became proportionately increased, until to-day more fine cut-glass is made and sold in the United States in one week than England produces in a month. In its old home the industry is now in a state of collapse. The majority of the English people prefer for common use the cheap German ware, while the English Glass Blowers' Union, one of the most tyrannical and unreasonable of labor organizations, has paralyzed what little remained of the finer trade. During the past five years a number of factories have been closed, hundreds of men are idle, both blowers and cutters, and quite recently a demand for 20% additional wages has been made by the workmen.



No rich cut-glass is made at the present time in other parts of Europe, as the predilection has always been for the light thin glass decorated by gilding or engraving. The French, for instance, make and use only the light wares, for which their Baccarat factory is famous.

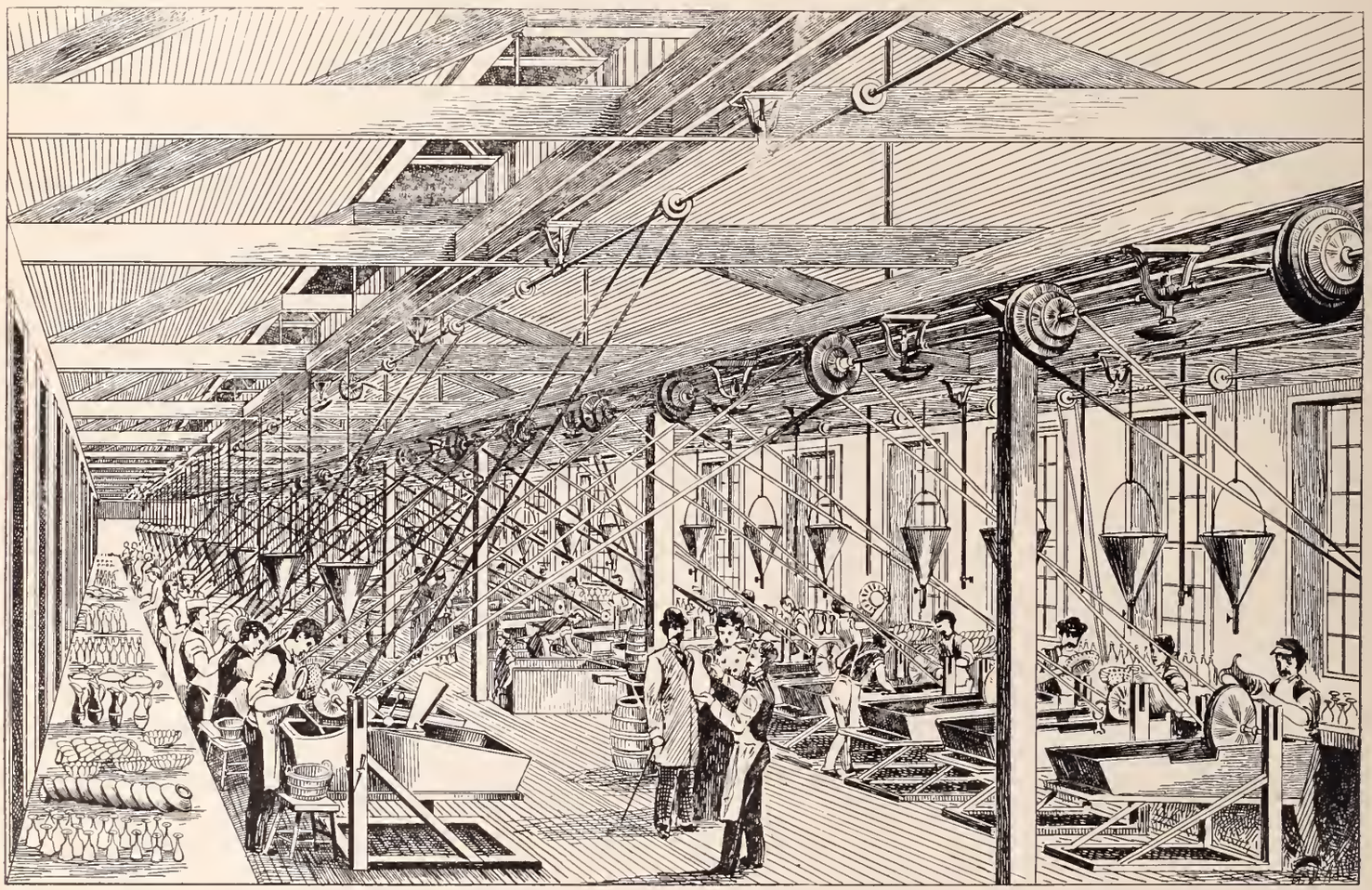
It is to our own country we must turn if we would know what degree of perfection has been attained in this beautiful art. With an advantage of a large middle class population possessed of sufficient means and taste to appreciate the best efforts of the glass cutter, and with a more sober and intelligent body of workmen, our manufacturers have quickly taken the lead in this line. The Paris Exposition showed this to all the world. The Hawkes exhibit on that memorable occasion amazed the Europeans, who had been nurtured in the belief that nothing artistic could come from America.

Among the first to recognize the merit of the new home product were the leading jewelers of the country. Year by year they have been increasing their purchases, and with the most satifactory results. Not only is the cut-glass department one of the best paying in a well conducted jewelry store, but there are also other desirable features that add greatly to its value, It is not only a thing of beauty itself ; it also takes up and reflects all the heauty round about imparting to the images some of its own prismatic hues. The jeweler is certainly the man who can most advantageously sell this beautiful ware, and it is with the purpose of giving the trade a general idea of how it is manufactured, and what the various cut-glass manufacturers in the country are doing to-day that this article has been written

Cut-glass manufacturers may be divided into two general classes—the manufacturers proper, who make their own "metal," or blanks as they are called, and then cut them into the finished articles, and the glass-cutters, who procure their blanks elsewhere and cut them for the market Of the first class of manufacturers there are about a half dozen in this country to-day, the principal being C. Dorflinger & Sons, White Mills, Pa.; The Phœnix Glass Co., Pittsburg, Pa.; The Mt. Washington Glass Co., New Bedford, Pa.; The Dithridge Flint Glass Co., New Brighton, Pa., and The W. L. Libbey & Son Co., Toledo, O. The oldest and largest strictly fine flint glass house in the country is the firm of C. Dorflinger & Sons, White Mills, Pa., on the Erie Railroad, and we will ask the reader to follow us while we briefly describe the process of manufacture as witnessed in their well appointed works. From beginning to end the process is one requiring the highest skill on the part of the workman, and, with the exception of a few boys called helpers, who generally develop into full-fledged glass makers, all the employes of a high grade glass factory are skilled men. The first stage in the process of manufacture is the mixing of thedifferent ingredients. These are the perfectly pure Berkshire sand, which is almost pure silica; red oxide of lead, especially prepared for the purpose; carbonate of potash and refined saltpetre, and oxide of manganese. All these various ingredients have their different uses, and the proper proportions in which they must be used is a problem only to be solved by long experience and close study of results. The lead gives cohesion and brilliancy, the carbonate of potash and refined saltpetre act as a flux and make the metal hard and bright, while the oxide of manganese serves as a coloring agent. When the component parts have been sieved and thoroughly mixed the mass is wheeled into the furnace room, a large, high room, in the centre of which is a great cone-shaped furnace enclosing ten or more pots of fire clay, about four feet high. Into one of these the mixture is placed to be melted. The flames from the fire underneath envelop the outer walls of the pot, and in the course of from 30 to 35 hours the mixture is reduced to a molten mass. During all this time it is very necessary that the degree of heat should hardly vary from the 2,000 degree point, as the consequences of carelessness in maintaining the temperature would be to impair the color of the finished "metal."

Round about this furnace are small gangs of men, one gang at each pot, "shops" as they are called, each shop consisting of three men and two boys. The metal having been reduced to a molten condition, the operation of blowing now begins. A workman advances toward the mouth of the pot and inserts into the molten mass a long iron pipe, turning it about until he has secured on the end of the pipe enough metal for the article he desires to make. To judge by the sense of touch just how much metal has been gathered with the pipe is no easy task, but an experienced glass blower can do it to a nicety. He then blows the bolus of metal out into a round hollow mass, and hands it quickly to a second workman seated at a bench provided with two long arms on which to roll the pipe while shaping the mass. This is done with a large pair of pincers specially designed for the glassmakers' use, the workman being entirely dependent on his experience to bring out the proper shape. Indeed,

the visitor at a glass factory is struck with the simplicity of the tools used, and cannot fail to be amazed at the rapidity and dexterity shown by the workmen in manipulating the glowing metal and turning it so deftly into the desired shapes After the second workman has completed his task, a third, called a finisher, receives the piece and completes it, adding a handle if necessary. Boys called helpers are in constant attendance upon the workmen, and thus are early initiated into the trade, which, in the majority of cases, they follow later in life. Each of the shops or gangs of men has its special work to do. One shop will make nothing but wine glasses, goblets, etc., another will be engaged entirely on handle work, bowls, vases, etc., and so on. By this division of labor more economical results are obtained. In the establishment of the Dorflinger's there are three furnaces, one of which is run exclusively on stem ware.



INTERIOR VIEW OF A CUTTING SHOP.

After the articles have left the finisher's hands they are placed in a kiln or oven to be annealed. Here they are kept for two days, gradually cooling. A sudden change of temperature at any time after they are put into the annealing oven would cause them to break in pieces at once. Consequently a very close watch has to be kept on the fires, and the articles are from time to time moved back further from the flames to make the cooling process gradual.

The ware is now ready for inspection. This must be very thorough, taking into account the thickness of the glass as well as its quality, for a blank which is adapted to one style of cut may be not at all suited to another. Only experience can determine this, as in the other stages of glass manufacture. The color must be closely scrutinized also, and no flawed blanks be allowed to pass. The finest blanks are those which show a bluish caste. These are the ones the cutter loves, for he can from these produce gems of art almost rivalling the diamond in purity and dazzling brilliancy.

We now enter the cutting-shop herewith illustrated, a long solidly built structure of stone, which the Messrs. Dorflinger had constructed specially for the purpose, and which is said to be the finest cutting-shop in the country. As we glance down the room, a busy scene meets the eye. Long rows of workmen stand on each side, each with his attention riveted upon a blank, which he is holding over a steel disc or wheel revolving rapidly, and continually supplied with wet sand from a hopper placed above it.

The sand employed is beach sand and it facilitates the cutting. The design to be followed by the cutter has been roughly chalked out by the foreman, but all the elaborate decoration has to be supplied by the cutter with nothing but his eye to guide him. A cut a little too deep will ruin the piece entirely—a cut too shallow will fail to bring out the full brilliancy of the metal.

It occasionally happens that an article which has passed the inspection is imperfectly annealed. Such pieces invariably break during the cutting process.

The first stage of the cutting process is called roughing, and consists in roughing out the design on the steel wheel. The second stage is called smoothing, and consists in removing the roughness resulting from the first process on a stone wheel, fed with water only The third stage is polishing the piece on a revolving wheel of wood, and afterwards applying a brush fed with pumice stone and putty powder—a composition of lead and tin burnt to a powder. The cutting process is very tedious and very exacting. The glass is heavy, punch bowls weighing over 30 pounds being not infrequently required. These overtax the strength of the workmen, when he is engaged for several days on one piece, and it becomes necessary to make use of a harness or strap to hold the piece in position. The last operation after washing is drying in sawdust, to remove all traces of the powder or moisture.

C. Dorflinger & Sons are the largest manufacturers of fine cut glass in the country. They employ in their works about 375 hands, nearly all of whom are skilled workmen. They run a cutting-shop

of about 140 frames, and besides the metal they use themselves they furnish large quantities to other cutters. The house has maintained a high standard of excellence consistently from the beginning. The most scrupulous care is exercised in every department of manufacture, and no piece of work defective in point of either color or cut is allowed to leave their works. They early left the beaten track of the mere imitators of English patterns, and devised new and original designs suited to the American taste. A generous demand responded to their efforts, and to-day they carry in their New York store, at No. 36 Murray street, by far the largest stock of fine cut glass in America, four floors being stored with the beautiful crystalline ware. They have placed several original designs on the market which have attained a wide popularity, notable among which are the "Florentine," the "Sultana," the "Parisian," and the "Royal."

The Messrs. Dorflinger manufacture a complete line of table and toilet ware, including colored hocks and fancy pieces, although they devote themselves mainly to the production of the fine, pure flint glass for which their name is now synonymous. Their trade-mark, which has been used for many years, is a group of three staple articles of cut glass ware surmounted by the name "Dorflinger," and any piece of ware on which this appears is warranted first-class in color and of faultless cut.

Christian Dorflinger, the founder of the present firm of C. Dorflinger & Sons, is said to be the oldest flint-glass maker in the country, having started business in 1852 in a little shop in Concord street, Brooklyn. An Alsatian by birth, he had little else when he set out on the road to fortune besides strong hands, sound sense, and a thorough knowledge of the glass business. After many years of successful enterprise in that city, he was obliged to seek health in the mountains. He chose a wild spot in Wayne County, Pa., five miles from Honesdale. After two years of farming his health was restored, and, feeling an irresistible desire to engage in his old trade again, he constructed a small furnace on his land on the present site of the works. The result is the large works that now make the wilderness blossom as the rose. Mr. Dorflinger, senior, as the years grew upon him, has detailed the management of the concern to his three sons, although he still exercises a general supervision himself.

ABOUT four years ago the Phœnix Glass Company, a large concern, at Pittsburgh, Pa., employing about 600 hands, began the manufacture of fine cut glass. They determined from the outset to make only one grade of ware, and that the best. With abundant capital and experience, and the further advantage of natural gas, they soon established a reputation for the quality of their goods. They make their own metal—for which they claim the highest degree of purity and brilliancy—due in part to their experience and skill in glass making, and also to the absence of all sulphurous vapors and smoke which always abound where coal is used for fuel, and are apt to discolor the glass in process of manufacture. Another advantage they find in the use of natural gas is in the annealing process. They can regulate the degree of heat with the utmost precision, so that the contraction is absolutely equal in all parts. The justness of this claim will be seen when it is stated that they never had a piece of glass reported as "flying" (a trade term, meaning that sudden and sometimes almost unaccountable breakage of imperfectly annealed cut glass). In their cutting-shop they run about seventy frames solely on deep-cut glass, keeping pace with the times by continually inventing original designs, among which the "Princess," "Imperial," "Olympic," and "Corinthian" have attained the greatest popularity. Their line embraces the usual variety of table and toilet ware, colored hocks and fancy vases, and an assortment of cut glass lamps. They also make a specialty of fine colored lamps adapted to the jewelry trade. At the Exhibition of American Art Industry, held last year under the auspices of the Pennsylvania Museum and School of Industrial Art, the Phœnix Glass Company were awarded a gold medal for the general superiority of their ware, although several prominent cut glass manufacturers were represented there. The judges in their award say that, "In purity of metal, brilliancy of color, and general excellence, the Phœnix Glass Company exhibit is superior to all others." On another page of this article will be found a cut of the exhibit, which was merely an assortment of their staple goods and no ambitious but unpractical effort at display.

ONE of the pioneer cut-glass manufacturing houses in the country (and, we believe, the sole survivor of three), is the Mt. Washington Glass Co., of New Bedford, Mass., which was established about 1855. They are large producers of both rich cut-glass table ware, and fancy colored glassware, employing about 350 hands, almost entirely skilled glass-makers and cutters. They make all their own metal, and claim for it the highest degree of purity and brilliancy, a new fuel for melting glass having been lately introduced in their factory which insures the most perfect results in point of color and lustre. This concern ranks among the most enterprising of its kind, having accomplished much for American industry in the line of art glass manufacture. The goods of their manufacture are novel in shape and cut, and have even found favor abroad. Some of their original patterns, most of them protected by patents, are the "Electric," "Wheeler," "Puritan," "Sultan," "Radiant," "Ascot," "Thurber," "Celtic," "Mayflower," and the "Brighton." The ever-popular strawberry diamond pattern they have of recent years improved by finishing the upper part of the design with a row of fan cuts, adding much to the appearance and little to the cost.

One of their specialties is crystal chandeliers, the former popularity of these goods having returned with double interest since the advent of electricity, which greatly heightens the effect of the scintillating crystal. The Mt. Washington Glass Co. are the *only* manufacturers of crystal illuminating fixtures in the United States to-day.

In addition to the large and varied line of rich cut-glassware which their artisans are busily turning out, this company is probably the most extensive producer of colored glassware in America. The justly celebrated "Burmese" ware originated here, specimens of which now grace the households of Her Majesty Queen Victoria and ex-President Cleveland, and the company have in their possession highly-prized autograph-letters in which these notables express their satisfaction with the articles. All dealers are familiar with the beautiful specimens of this company's decorated (hand-painted) art wares in "Royal Flemish" and "Albertine" finish, produced in the myriad forms of lamps, shades, vases, jugs, etc, all useful household pieces as well as works of art. The pretty little egg and tomato-shaped salts, peppers and sugar-sifters are turned out here by the hundred thousand in response to demands from every nook and corner of this and other lands. In their bisque-finished ware the effect produced by the tasteful combination of soft color-tones is exceedingly beautiful, challenging comparison with the best efforts of the foreign makers. In fact, the triumphs of the Mt. Washington Company in the difficult and hitherto untried field of the domestic manufacture of fancy colored glassware have done much to dispel the prejudice against domestic goods. To-day many domestic goods are disposed of as "imported" or "foreign," a very high compliment to American craftsmen. The rapid strides their manufactures have made in popular estimation have rendered necessary an increase in the plant, and with the recent addition of a building, 150x40 feet, affording room for 100 more artisans, they now have the largest decorating establishment of its kind in the country. This increase will bring their force of employees up to nearly 500 men, all engaged on rich cut-glassware, or the fine colored specialties above-mentioned,

to which should be added an extensive line of Amberina glass, and the noble Iridescent glassware, which, however, had a short reign of favor, though eminently worthy of a revival.

At the great Centennial Exhibition at Philadelphia in 1876, the Mt. Washington Glass Company received a medal and two diplomas for the superiority of their crystal chandeliers and opal glasswares.

The New York salesroom of the company is at 46 Murray street, where a fine line of samples can be seen. The jewelry trade will find this stock of special interest on account of its variety, comprising as it does specimens of all the popular forms of manufacture, in both rich cut-glass and fancy colors of original domestic pattern, all finished in the highest style of the art.

CORNING, N. Y., on the main line of the Erie railroad, is at present the head center of the glass-cutting as distinguished from the metal-producing branch of the cut-glass industry. More glass-cutters ply their trade in Corning than in any other town of the country. First there is the establishment of T. G. Hawkes & Company, the most extensive glass cutting concern in the country, employing between 175 and 200 hands, and producing ware that in point of beauty and finish is unsurpassed anywhere in the world. The business was established in 1880 by T. G. Hawkes, who had then had a long practical experience in the glass business, and whose rich cut glass has been a favorite with the jewelry trade from the start. The growth of the business has been phenomenal, owing to the judgment displayed in the selection ofblanks and the fine taste shown in the cutting. New and striking effects are constantly being sought for both in design and in color combinations, of the latter of which they make a specialty, obtaining colors of remarkable perfection and delicacy of shade. The rich ruby glass is obained by gold, 999 fine, (in solution and fused) The canary is obtained by the use of oxide of uranium, a most expensive material, and all the other prismatic colors known to the glassmaker are seen in their wares in their highest perfection in stem glasses, vases, etc. Some of the most striking effects are produced by a combination of several colors in one piece, so cut as to bring out the most brilliant and harmonious color effects. This department of the cut glass business is full of interest and if the properties of the different minerals and their effects in the production of glass are closely studied, the possibilities of combination are almost endless. In addition to full line of all the styles of table and toilet ware now in vogue, this firm also manufactures large numbers of handsome candelabra of from one to nine lights.



EXHIBIT OF PHO NIX GLASS AT THE EXHIBITION OF AMERICAN ART AND INDUSTRY, PHILADELPHIA, 1889.

It is to the enterprise of T. G. Hawkes & Co. that we are indebted for the most creditable exhibit of cut glassware at the Paris Exposition of 1889, and for which the Grand Prize was awarded. This American display opened the eyes of Europeans to the astonishing progress we had made in this line of ma ufacture, and was a revelation to many American tourists who are too willing to slight our own attainments in the artistic line, and travel thousands of miles to get what might be better obtained at home. The beneficial results of this exhibit and resulting award has already been felt, not only by the house that made it but indirectly by the whole American cut-glass industry. It contributed not a little to strengthen the hold cut glass had already secured by sheer merit upon the popular mind. All credit to Messrs. T. G. Hawkes & Co. for upholding the fame of American art abroad.

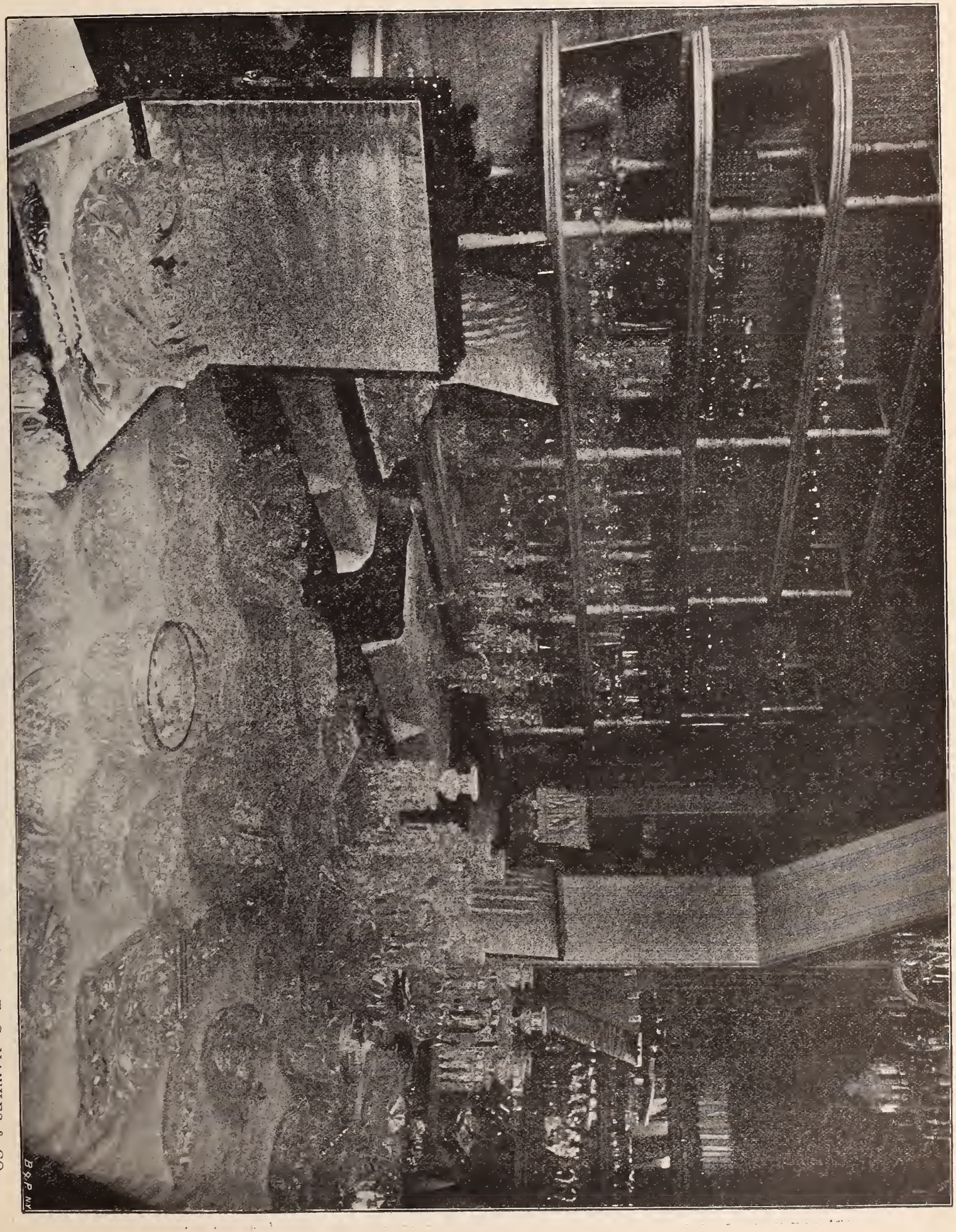
This house has a deserved reputation for the beauty of finish of its goods. The cutting is original in style and design, and most carefully executed. Many of the designs produced have all the luster and scintillating beauty of rich jewels, and mark the very acme of attainment in the art of glass cutting. Their showroom at the Corning works which is elegantly fitted up in attractive colors with its dazzling array of gems of the cutter's art, is not unlike the treasure room of some monarch of the East, except that Messrs. T. G. Hawkes & Co. are always glad to welcome jewelers who come to inspect their treasures and can even be prevailed upon to part with them. Any jeweler who purchases of this house can be sure that he is getting the very best the market affords, wares that will prove an ornament to his store, and a delight to the eyes of his customers.

One of the processes for coloring glass to be cut, is as follows: A thin cup is made of colored glass of the desired color; the mass of flint glass on the end of the glass maker's pipe, of which the article is to be made, is dipped into this cup, which acts as a coating or covering for it. The whole mass is then worked into proper shape, the coloring having spread to a uniform thickness over the whole of the outside. Colored glass is cut the same as any other. Cutting through the thin coloring exposes the flint, which on being polished, appears doubly brilliant, the coloring and the crystal forming a beautiful contrast.

J. HOARE & CO. the oldest glass cutters in the country are also located at Corning, operating a shop of 130 to 140 frames on castor-bottles, pickles, celeries, etc., for the silver-plated ware manufacturers, and producing largely of the finest examples of cut table ware. John Hoare is the veteran glass-cutter of the country, his experience dating back over forty years.

THE Dithridge Flint Glass Company, New Brighton, Pa., operate a large 16-pot furnace and produce excellent metal, cutting some of it themselves and disposing of a good deal to other cutters. Their cutting shop gives employment to nearly 100 hands, who are engaged mainly on fine table ware.

ABOUT two years and a-half ago, the well-known importers of fancy goods, bric-a-brac, etc., L. Straus & Sons, 42–48 Warren street, New York, began the manufacture of fine cut table glass, fitting up a factory at 14 Jay street, not far distant from their extensive ware-rooms. They applied themselves solely to the pro



SECTION OF SHOW ROOM AT CORNING, N. Y SHOWING A PORTION OF THE CUT GLASSWARE SENT TO THE PARIS EXPOSITION, 1889, BY T. G. HAWKES & CO., FOR WHICH THE GRAND PRIZE WAS AWARDED.

duction of rich deep-cut table ware, making no castor-bottles or cheap ware whatever. The growth of this branch of their business was astonishingly rapid. At the present time they are running over eighty frames, and are continually increasing their force of cutters. They claim for their glass superiority of metal—the pure silver-white, never either high or low in color—variety of design and shape, and the clear, deep cutting that alone brings out the brilliancy and prismatic effects of the finest metal. Among the numerous special designs which they have placed on the market, and which cannot be found elsewhere, may be mentioned the "Venetian" (a patented design), "Prismatic," "Electra," "Moorish," "Kohinoor," "Capital," and "Renaissance." In addition to these special patterns, they cut in all the popular styles. The jewelry trade are large purchasers of their wares, to the display of which they are now obliged to devote an entire floor in their mammoth showrooms. The arrangement of the tables in the cut glass department is artistic and unique, being well adapted to bring out the rare beauties of the goods. Their revised catalogue, which they will send to jewelers on application, is well arranged, and gives a good illustration of their line, so far as it can be obtained by printing. L. Straus & Sons enjoy the distinction of being the only cutters of exclusively fine glass operating a factory in the city of New York.

AMONG the younger glass-cutters of the country, the firm of T. B. Clark & Co., Honesdale, Pa., takes a prominent place. This firm, which was established in 1884, runs about eighty hands, and produces only the finest grade of cut glass, including everything known to the trade in table and decorative ware. Some of their patented designs are the "Duchess," "Minerva," "Czar," "Czarina," "York," and "Bartholdi," all meritorious and popular in style To meet the increased demand for their goods the firm is now constructing a new factory at Honesdale, which, when completed, will be as commodious and well appointed as any in the country and will give employment to about 125 hands. Their New York store is at 17 Murray street, George C. Sterling, agent, where a full line of samples is on exhibition.

WAYNE County, Pa., bids fair to become one of the chief centers of the cut glass business. A new firm, O'Connor & Marrett are building a factory in Hawley, a few miles east of White Mills, which it is expected will afford employment to 140 or 150 skilled cutters. With the Dorflingers at White Mills as the source of pure white metal, and T. B. Clark & Co., and the new firm at Hawley in close proximity, Wayne County will shortly contain within its borders 350 to 400 glass cutters producing the choicest grades of ware.

McCUE & EARL, 22–30 Morton street, Brooklyn, N. Y., run about twenty-five frames on the finest grade of ware exclusively. They have been in business since 1881, and are both practical cutters of long experience and good taste in the invention of designs. They cut in all the current styles, and show besides a number of special patterns of much merit not to be found elsewhere. The metal they use is as good as the market affords.

SEVERAL of the plated ware companies run cutting shops in conjunction with their factories, mounting the articles in the form of castors, cracker jars, etc. The pioneer concern in this line was the Meriden Silver Plate Co., of Meriden, Conn., who have made a specialty of mounted cut glass for several years. So great was the encouragement they received in placing these goods before the trade that they decided about two years ago to embark in the manufacture of the finest grade of rich cut tableware. They now operate a shop of considerable proportions, and display a line of goods original in design and of striking purity and brilliancy of metal. Tableware of all kinds and sizes is their specialty (excepting stem ware which they do not cut), and in addition they offer a large assortment of rose jars and cut glass lamps of the richest and costliest pattern. The smaller grades of ware such as celeries, castor bottles, etc., they cut in large quantities for their own mounting. Energetic and enterprising in this as in all things, the Meriden Silver Plate Co. are busied with new ideas and fancy cuts of the most original style. Some of their patented designs need but be mentioned to be remembered, for example, "The Monarch," "Improved Russian," "Hob, Lace and Diamond," and most recent and original of all, perhaps, "The Winthrop," which exhibits some entirely new features in glass-cutting. This concern is now making quite a drive in cut glass, and is prepared to meet all the requirements of the jewelry trade (with the exception of stem ware.)

The Wilcox Silver Plate Co., of Meriden, also run a shop of about twenty frames for their own convenience in mounting, and make a specialty of this class of plated ware.

MERIDEN can also boast of a glass-cutter of high rank in the person of James D. Bergen, who produces some of the most artistic goods in the market to day.

This business was established in 1880 as Bergen & Niland, Mr. Niland selling out in 1886. He employs forty cutters in Meriden engaged on the best class of work, and in Port Jervis, N. Y., he keeps twenty-five hands working on cut glass used in connection with the silver plated ware trade. Mr. Bergen also has an interest in Bergen Bros., 36 South First Street, Brooklyn, N. Y., and takes the total output of the twenty-five frames they run. The same also applies to the output of Thomas Niland, of Stonebridge, England, who employs thirty-five glass cutters. Mr. Niland was formerly the member of the firm referred to as Bergen & Niland. The principal cuttings of this establishment are the "Columbia," "Continental," "Concord," and "Excelsior," besides all the regular trade patterns. Mr. Bergen has lately issued a catalogue and price list which can be had by the trade on application. He is a practical glass cutter having worked at the trade in all its branches with some of the oldest houses in the country.

From this brief review of the various cut glass manufacturers, it will be seen how extensive the industry is in the United States, and how phenomenal has been its growth. The total number of cutters employed at the trade is probably not far from 1,000, with every prospect of a rapid increase in the force of labor. Who is to market these goods? All the manufacturers are looking toward the jewelry trade as the natural distributors of their wares, and it will be a decidedly profitable investment for the jewelers if they seize the opportunity now afforded them of supplying the popular demand by adding to their stocks a choice assortment of the products of the American cut glass manufacturers.

The Jewelers' Security Alliance.

A SPECIAL meeting of the Executive Committee was held at the Alliance Office on October 23. There were present, Messrs. Sloan, Hayes, Untermeyer, Bowden, Lewis, White, Karsch, and H. H. Butts.

The following applicants were admitted to membership: C. A. Darussel, 35 Lake Street, Owego, N. Y.; Henry Euler, 716 Chestnut Street, Philadelphia, Pa.; Joralemon & Diesinger, 720 Samsom Street, Philadelphia, Pa.; Thomas S. Mitchell, 4 South Eighth Street, Philadelphia, Pa.; Henry Hinke, 425 Ninth Street, N. W., Washington, D. C.; J. H. Knerr, 443 Kaighn Avenue, Camden, N. J.; A. A. de la Reussille, Main Street, Freehold, N. J.; Leon de Reussille, Brood Street, Red Bank, N. J.

Neglected Problems.*

No. 2.—Part V.

WHEEL AND PINION GEARING AS LEVERS TRANSMITTING POWER

By "Excelsior."

(*Continued from Oct.* Circular, *page 54.*)

(This article has appeared in the January, July, August, September and October issues.)

IN the case of the inclined plane we were able to draw a triangle which would give us the amounts of all the forces acting upon it by measuremen of the lengths of its sides. The same thing can be done with the wedge, as shown by Fig. 30, (see last month's article), giving the dimensions of the wedge and the directions of all the acting forces.

TRIANGLE REPRESENTING THE FORCES OF A WEDGE.

Now, here are quite a number of forces, there being no less than eight of them, as shown by the arrows. We first want to know which are the acting or active forces. We can determine them by the axiom already given that *no work is done without motion.* Therefore, where there is no motion in the direction shown by an arrow, the force corresponding to that arrow does no work. Tested in this way we rule out arrows F^4, because neither the wedge nor the table moves vertically, and arrows F^5 because neither W nor G moves laterally. F^2 shows the direction of the motion of the wedge, F^1 that of the body W, and F^3 shows the direction of the action of the wedge while lifting W. F^1, F^2 and F^3 are, therefore, the forces called into play by the action of the wedge.

From the point C, on W, draw the line $C\ D$, perpendicular to $A\ C$, forming our representative triangle $C\ D\ E$. This line $C\ D$ is parallel to the direction of force F^3. $C\ E$ is parallel to F^1, and $D\ E$ is parallel to F^2; moreover, these lines correspond in their relative *lengths* to the strengths or *amounts* of those forces, as we will find by measuring them. That is to say, a power equal to $D\ E$ will lift a weight equal to $C\ E$, and by means of the wedge it will exert a pressure equal to $C\ D$ against W in lifting it. The distance through which W will be lifted is, of course, equal to $B\ C$, if the wedge moves far enough to bring $B\ C$ under the point A, of W; and the distance the wedge moves is equal to $A\ B$. To get the actual amounts of each of these items, we may start with any one which is known. For instance, if we know that W (or F^1) is 360 lbs, we make $C\ E$ in our drawing 1 inch (or 1 foot) long. Then measure the other lines mentioned, get their relative lengths, and multiply 360 by those numbers, according to my original rule before given. The product will in each case be the actual amount of the force whose direction is parallel to that line. For example, $C\ E$ being 1 inch, suppose $D\ E$ (which is parallel to force F^2) to be ¼ inch, then $360 \times ¼ = 90$ lbs., the force (F^2) required to operate the wedge; and so on with the other sides, as fully explained for the inclined plane.

It will be noted, of course, that all depends on the thickness of the wedge, for the higher $B\ C$ becomes the longer $D\ E$ also becomes, because the line $C\ D$ has to incline further in order to be perpendicular to $A\ C$. But if it is desired to compute the various forces *directly* with reference to the thickness of the wedge, we make our drawing with $A\ B$ equal to 1 inch (or 1 foot) and $B\ C$ the proper relative length, whatever that may be. Then $F^3 = F^1 \times A\ C$, and $F^2 = F^1 \times B\ C$, *i. e.*, the power of the wedge depends on its thickness (vertical height $B\ C$), as before stated. The geometrical formula is $F^2 = F^1 \times$ tangent of A, etc.; but I do not go into that subject, as it is not necessary.

Having the amounts of the various forces and the distances or lengths of the sides, it is now easy to compute the work done by the wedge, in the manner before explained. For example, a force of 90 lbs. will lift a weight of 360 lbs, as just stated, through a height ($B\ C$) of ¼ inch. But although, by means of the wedge, F^1 can be lifted by F^2, which is only ¼ as great, there is no work actually gained by it, because in doing that it would have to travel over a distance 4 times as great, since $A\ B$ is 1 inch long. So what is gained in power is lost in distance moved, as has so often been shown. And this may be a good place to emphasize the truth that no mechanical device is possible whereby you can get more out than you put in. You may put force or energy into it in one form and get it out in another form which is more convenient or more suitable for your particular purposes, but what is gained in one respect will be lost in another, and the amount of work you get out of it will be less than what you put in, on account of the unavoidable losses by friction, etc. You may put in a certain amount of force, acting at a certain velocity (*i. e.*, moving over a certain distance per second), and you may either get more force with less velocity, or less force with a greater velocity. Or you put in a certain amount of force acting for a certain length of time, and get more power for a shorter time, or less power for a longer time. But in every case the *work*, which is the product of *force*, *distance* and *time*, will be the same.

VIRTUAL LENGTH OF A LEVER ARM.

Thus far we have been briefly considering the various mechanical laws and principles involved in the action of wheel and pinion gearing, and the method of computing the amount of work done in each case. We are now ready to apply these laws and principles in studying the action of a wheel upon a pinion, or the reverse. The first point necessary to clearly understand is, that the actual length of the arm of a lever, as measured, is not always the working or mathematical length,—in fact, it *never* is, except where the contact between the tooth and leaf is on the line of centers. And the measured length may differ very greatly from the working length; the latter may be less than half of the former. Figs. 31 and 32 show a

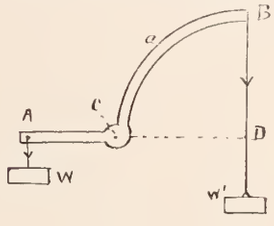


FIG. 31

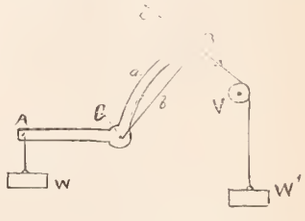


FIG. 32

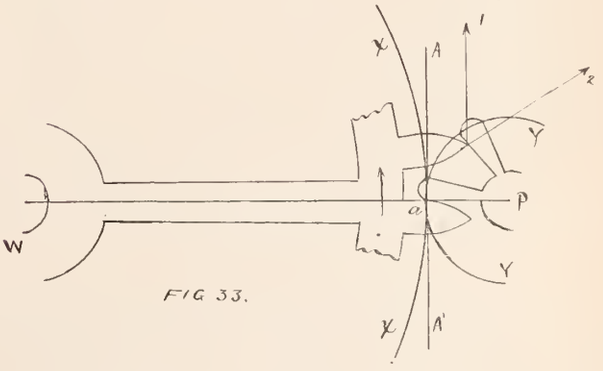


FIG. 33.

lever, $A\ C\ B$, turning on the fulcrum or axle C. W is a weight representing the power, and W^1 the resistance, or weight lifted. $A\ C$ is the power arm of the lever. The resistance arm, $C\ a\ B$, is bent or curved. Its actual length is found by measuring along the curve, but that is not its working length, which is $C\ D$ in Fig. 31 and $C\ b\ B$ in Fig. 32, and is called *the virtual length.*

When the lever is not a straight line, or when the action is oblique, the actual lengths of the arms are not in the proportion of the power to the resistance, but their virtual lengths are in that proportion. The law for finding the virtual length of a lever arm is this: *Draw the direction in which the force acts upon the arm, then draw a straight line perdendicular to this direction, and passing through the fulcrum of the lever. This line is the virtual length of that arm* In Fig. 31 the line from B to W^1 indicates the direction of the force, and the

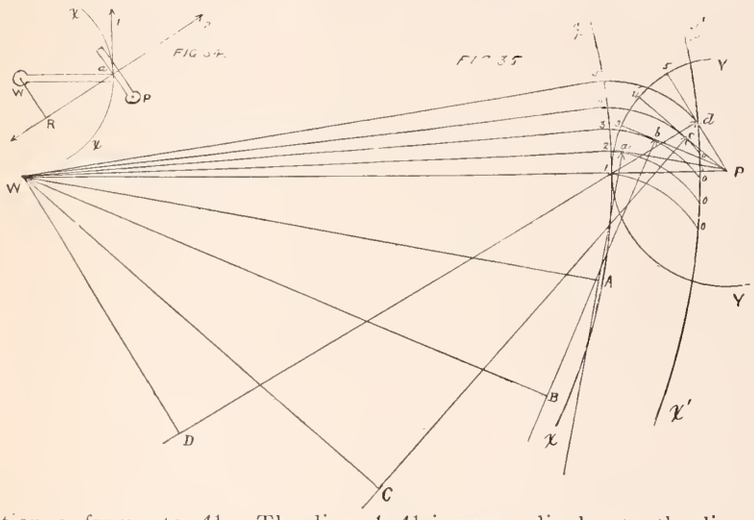
* Copyright by The Jewelers' Circular Publishing Co., 1889.

line *D C*, drawn perpendicular to *B W*¹, and passing through *C*, is the virtual length of the curved arm *C a B*. In Fig. 32, the weight *W*¹ is suspended from *B* by a cord passing over the pulley *V*. The force pulling on *B* is therefore in the direction *c B V*, as shown by the arrow head. *B b C* is therefore the virtual length of the curved arm *C a B* in this case, and this length represents the true power of that arm in making calculations.

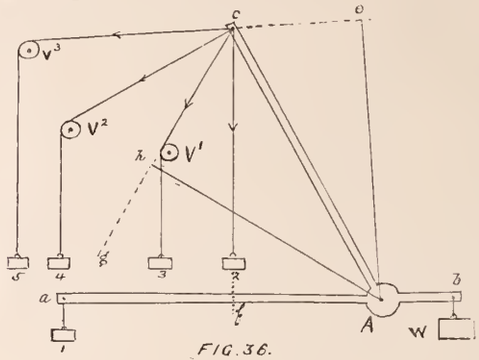
DIRECT ACTION AND OBLIQUE ACTION.

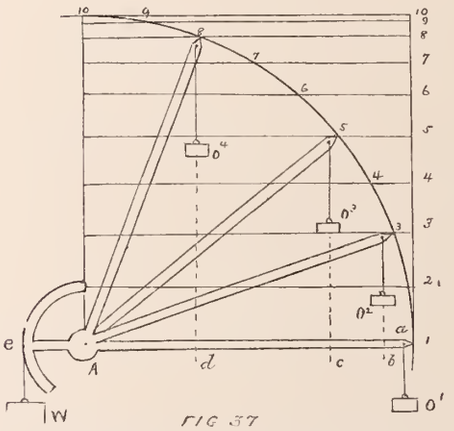
Let Fig. 33 represent a wheel whose center is at *W*, acting on a pinion with its center at *P*. The curve *X X* represents the pitch circle of the wheel, and *Y Y* that of the pinion. As is well known, these pitch circles must just touch on the line joining their centers *W* and *P*, in order to have a correct depthing, and they touch at *a*. One tooth is represented as touching a pinion leaf at *a*, on the line of centers; and when in that position contact between them occurs at that point in each which lies in its pitch circle. This is the ideal depthing, and in that position the working semi-diameter or radius of the wheel is *a W*, and that of the pinion is *a P*, *i. e.*, the virtual radius is the same as the measured or actual radious. But as they move forward to the position shown by the upper tooth and leaf, the contact is not on the pitch circle of either the wheel or the pinion, as inspection shows. One would naturally suppose, at first thought, that the working radius of the wheel was now the distance in a straight line from the tip of the tooth to the center *W*. But it is not so. It is actually *less* than the distance *a W*, because this is a case of oblique action, and we therefore have to deal with the *virtual* and not the measured length of the lever arm.

For my own part, I see no need of the distinction between direct and oblique action, for the same rule will give the virtual length of the lever in both cases. In Fig. 33, in the position shown by the lower tooth and leaf, the wheel is acting or pressing in the direction of the line *a* to *A*. The pinion resists or acts in the opposite direction, or from *a* to *A*¹. The line *A A*¹ is perpendicular to the line of centers *W P*, and represents the direction of both the force of the wheel and that of the pinion. When the force acts at right angles to a line drawn from the point of contact to the fulcrum or center, as in this case, it is called direct action, because the lever acts in the same direction that it is moving. According to the rule just given, the virtual lever arm will be found by drawing a line perpendicular to the direction of the force and passing through the fulcrum or center. In the case of the wheel, such a line would evidently begin at *a*, on the line of centers, and reach to *W*, and for the pinion it would reach from *a* to *P*. We see from this, that when the force acts directly, *i. e.*, on the line of centers, the real or measured length of the lever arm is the same as the virtual length.



In the case of the upper tooth and leaf, the tooth *moves* in the direction shown by the arrow *1*, but it *acts* in the direction of arrow *2*, because it is pushing the pinion leaf in that direction. We know that to be so, for the leaf cannot move in any other direction. This is plainly not direct but oblique action, and we must find the *virtual* length of the lever arm if we want to know its power. This point is illustrated by the separate Fig. 34, representing two simple levers with their centers at *W* and *P*. The curve *X X* is the path of the end of the lever *W*. At the position shown it is *moving* in the direction of the arrow *1*, which is a tangent to its path at that point. Now in what direction is it *acting?* We need not guess at it, for we can mark out the precise direction. Inspection shows that this is a case of sliding contact on an inclined surface. In Fig. 33, the whole length of the point of the tooth has rubbed over the pinion leaf, and in Fig. 34 the same thing is taking place.





In the last article, on the inclined plane, we had a rule for finding the direction in which the forces act when a body is urged along a smooth surface, and that is *in a line perdendicular to both surfaces at the point of contact.*

In Fig. 33 the arrow *2* is evidently perpendicular to the face of the leaf at the point of contact, and it is also evident that it must be perpendicular to that minute part of the tooth which is touching the leaf, for if that point on the tooth was not parallel to the leaf the contact would have been at some other point, which was higher, *i. e.*, projected further forward. So, in Fig. 34, the line *2 R* is perpendicular to the acting face of lever *P*, and also to that of *W* at the point of contact Having the direction of the force thus indicated, we have only to draw a perpendicular *R W* from that line to the center *W* to find the virtual length of the lever *W* when in that acting position. The same process shows that the virtual length of lever *P* is the distance from *a* to *P*. By applying this process to Fig. 33 we will find that the virtual radius of the wheel is much shorter than *a W*. If the force which propels the wheel remains constant, the tooth will now act on the leaf with much greater force than it did when on the line of centers, but will not move it so rapidly, the gain in power being balanced by the loss in velocity or distance moved.

VIRTUAL DIAMETERS OF WHEEL AND PINION IN ACTION.

The oblique action of tooth and leaf is more fully illustrated by Fig. 35. For the sake of clearness, only the acting faces of one tooth and one leaf are shown. *X X* is the pitch circle of the wheel, and *Y Y* that of the pinion, and they touch at *1*, on the line joining their centers *W* and *P*. The acting face of the body of the tooth lies in the line *W 1*, and its curved point extends from *1* to *o*. This tooth is shown in five different positions, marked *1, 2, 3, 4, 5*, representing equal forward movements. The straight face of the pinion leaf is represented by straight lines from the center *P* to the points *1, 2, 3, 4, 5*, where it has been carried by the tooth, and it rests on the point of the tooth in each of these positions. The curve *X*¹ *X*¹ marks the extreme tips of the teeth.

When the tooth is in the position *W, 1, o*, the face of the leaf is in the position *P 1*. Both tooth and leaf are on the line of centers,

touching at *1*. Their virtual lengths are therefore the same as their actual lengths, as drawn. The tooth now moves forward to the position *W, 2, o*, carrying the leaf to the position *P 2*. The contact between them is now at the point marked *a*. We wish to know the virtual radius of the wheel at this moment. Following the rules already given, draw the line *a A* perpendicular to *P 2*, and you have the direction of the force as shown by the arrowhead, then draw *A W* perpendicular to that line and reaching to the center *W*. The distance from *A* to *W* is the virtual radius of the wheel when in that position. When the tooth has moved forward to *W, 3, o*, and carried the leaf to *P 3*, the contact is at *b*, and the foregoing process will give us *B W* as the virtual radius of the wheel. In positions *4* and *5*, the radius becomes *C W* and *D W*, respectively.

The same process applied to the pinion shows that its virtual radius is successively *1 P*, *a P*, *b P*, *c P* and *d P* in the different positions, growing shorter at the same time that the radius of the wheel becomes shorter. And although they do not, in this drawing, decrease in the same ratio, it is evident that it would be easy to give the point of the tooth such a curve that they would do so, and in every position the virtual radius of the wheel would be five times that of the pinion, as it is when on the line of centers. It will now be seen how the actual or measured length of the wheel arm (radius) can grow longer and that of the pinion shorter without affecting the amount of power transmitted by the gearing.

COMPUTING THE WORK DONE IN DIFFERENT POSITIONS.

We now know how to find the virtual radius of a wheel or pinion in any position, and the force with which it is acting. It only remains to consider the method of computing the amount of work done in any given position of the tooth and leaf, and to solve the problem set in the first article, in Fig. 1. I reproduce that figure in two parts, modifying them to suit our present purposes. In Fig. 36 the problem was to find the power which each of the small weights exerted when arranged as shown. Weights *1* and *2* are suspended directly from the lever, while the cords of weights *3*, *4* and *5* run over pulleys V^1, V^2, V^3, which changes the direction in which they pull on the lever. The direction of the force is shown by the arrow head in each case. After what has been said about ascertaining the virtual length of a lever arm it cannot be difficult for the reader to find that the weights *1, 2, 3, 4, 5* are acting upon virtual lever arms whose lengths are respectively *aA*, *fA*, *hA*, *cA* and *eA*.

Fig. 37 illustrates a lever whose short or power arm carries a weight *W*, by a cord running on a segment of a circle, so that its power remains constant in all position of the lever, because this arm, *A e*, has always the same length. It is evident that as the long arm *A a*, moves upward its virtual length becomes shorter. The direction of the force (of the weight) acting upon it is vertically downward, and we represent it by vertical dotted lines from the point of suspension of each weight *O 2*, *O 3*, *O 4*, crossing the horizontal *A a*. A line perpendicular to these, and reaching to the fulcrum *A*, gives the virtual length of the lever in each position, which will obviously be the distance from the axis *A* to the points of crossing *A a*, at *b*, *c* and *d*. While the long arm *A a* is five times as long as the short one *A e* when in the horizontal position, it is virtually less than twice as long when in the position O^4, and has more than 2½ times the lifting power of *A a*. But, although it can lift a greater weight, it lifts it through a shorter distance, and thus the gain in power is balanced by the loss in velocity.

To show this, we describe the quarter-circle *1* to *10*, with center at *A*, and divide it into equal parts, marking them from *1* to *10*. Next draw a horizontal line passing through each of these dividing points, and number them from *1* to *10*. As the long arm moves over each space on the curve, the distance between the two corresponding horizontal lines gives the vertical height through which it has lifted the weight, showing that the height diminishes as the power increases. The amount of work that the lever can perform is therefore the same in each of the positions.

(*To be Continued.*)

Obituary.

EUGENE HUGUELET.

On the evening of Oct. 4, Eugene Huguelet, the well-known jeweler of Charleston, S. C., passed away from our midst, at Stony Point, N. Y. The deceased had been in poor health for some time, and was staying at the latter place in hopes of recuperating it.

Mr. Huguelet was born fifty-six years ago. In 1859 he came to this country from Switzerland and settled in Charleston, where he entered the house of Hayden & Gregg, as watchmaker. He remained with this concern until 1876, when he began business on his own account. He soon won the confidence of the public, and his business proved successful to a remarkable degree. He was a member of many of the benevolent societies of the city, and was particularly prominent in Charleston Lodge, Knights of Honor. Two sons and two daughters survive him; one of the sons, Jules, is well known in Charleston as an organist.

EDWARD BALBACH.

Edward Balbach, the founder of the great smelting works of E. Balbach & Sons, of Newark, N. J., died on the morning of Oct. 14, at the age of 87 years.

The deceased was born at Carlsruhe, Baden, in March, 1804. In his youth he learned the trade of a smelter. He came to this country in 1848, and in 1850 he took up his permanent residence at Newark because of the numerous jewelry factories there. He began be refining jewelers' sweepings and waste, and finally got into ore smelting on a large scale and amassed a fortune of several millions. His processes made him the most famous smelter in America, and he diverted a great deal of business which was annually going abroad. Mr. Balbach worked every day among his men until five or six years ago, and exercised a constant supervision over every department of the huge works up to his eightieth year. In 1873 he established a branch refinery at Omaha, and three years ago an additional branch was established in Mexico.

NESTOR J. BEVILLARD.

Nestor J. Bevillard, of Lockport, N. Y., died from consumption at noon, October 16. The deceased was born in France, and came to America seventeen years ago. He lived in various parts of the country for four years, finally settling at Rome, N. Y., as a jeweler and watchmaker. Four years ago he sold out his store in that town and moved to Lockport, where he opened another establishment, which he retained until the time of his death.

Mr. Bevillard was a prominent Mason, and was a member of the Royal Arcanum. A widow and two chiidren survive him.

A New Tell-Tale Time-Piece.

MR. W. G. PAVY, the Deputy-Locomotive Superintendent of the Madras Railway, has just invented a patent automatic time-indicator. The machine is a time-piece to which is attached a barrel, around which is wound sheets of paper, marked out with spaces, and under which is a sheet of carbonized paper. This machine is fixed to a bracket on the top of the fire-box of the engine, and is connected with it by a pipe which leads into a sheave above the trailing-wheel of the engine, and is worked by a pump. The barrel revolves as the hands of the time-piece move round, and when the engine is in motion the water in the tube works a needle which marks the paper round the drum attached to the time-piece. When the engine stops the barrel moves round, but no marks are made on the paper. Thus at the end of a journey the stoppages can be accurately ascertained by the number of spaces left unmarked, while the marking on the paper will indicate the time occupied in running between stations, and thus the speed.

OUR TRADE ORGANIZATIONS

THE JEWELERS' SECURITY ALLIANCE.

THE regular monthly meeting of the Executive Committee was held at the Alliance office on the 10th inst.

There were present Vice-Pres. Untermeyer; J. B. Bowden, Chairman; Chas. G. Lewis, Treas., and Messrs. White, Butts, Karsch, and Geo. H. Hodenpyl, Sec'y.

The following were admitted to membership:

Geo. T. Beeland, 320 2d st., Macon, Ga.; Fred'k Baehr, 1403 Market street, St. Louis, Mo; The J. M. Chandler Co., 204 Superior st., Cleveland, O.; Joseph Daller, 391 Vine st, Cincinnati, O.; E. L. Entrikin, 404 Main st., Findlay, O.; Charles Fichtel, 516 S. 2d st., Philadelphia, Pa.; Walter H. Grunert, Main st., Oconto, Wis; E. D. Horn, 224 N. Main st., Lima, O; E H. Kortkamp, 507 Franklin ave., St. Louis, Mo.; Wm. Loeffel, 1224 S. Broadway, St. Louis, Mo.; Thomas Lovell, 5th and Race sts., Cincinnati, O; Mitchell & Son, Main st., Mystic, Conn.; F. H. Niehaus, 1302 Franklin ave., St Louis, Mo.; Jules A. Piccard, 1233 Fulton st., Brooklyn, N. Y.; J. F. Schmitt, 1500 S. Broadway, St. Louis, Mo; Fred. L. Steiner, 3621 N. Broadway, St. Louis, Mo.; Jos. S. Voss & Son, 64 & 66 W. 4th st., Cincinnati, O.; Jno. F. Zeitler, 2013 Salsbury st., St. Louis, Mo.; W. D. Dreher, 145 Gay st., Knoxville, Tenn.

F. A. Hardy & Co., Chicago, Ill., were admitted on Sept. 12th.

THE JEWELERS' LEAGUE.

AT THE monthly meeting of the Executive Committee held on Friday evening October 3, there were present, President Hayes, Vice-President Greason, and Messrs. Howe, Jeannot, Houghton, Untermeyer, Jenks and Sexton, Secretary.

Five requests for change of beneficiary were granted, one application for membership was rejected, one referred for investigation and the followfng applicants accepted as members: Solomon De Bear, New York City, recommended by John W. Senior; Henry Dodt, Cincinnati, O., recommended by A. Steinau, Jr.; Louis Homan, Cincinnati, O., recommended by D. Schroder; Otto Reutlinger, Cincinnati, O., recommended by W. H. Goldberger and John C. Daller; Richard Robinson, Huntington, Ind., recommended by C. H. Knights and A. Herman; Bernard Schmidt, Memphis, Tenn., recommended by Wm. Voellinger; Henry Schroeder, Cincinnati, O., recommended by A. Steinau, Jr.

THE JEWELERS' AND TRADESMENS' COMPANY.

A REGULAR meeting of the Board of Directors was held on October 20, the following gentlemen being in attendance: Directors Cottle, Downing, Smith, Baldwin, Roberts, Treasurer Saxton, Secretary Johnson, and President Woglom.

Since the previous meeting the following have been granted certificates of membership:

Adelbert J Dunham and David J. Larkin, with Gorham Mfg. Co. Albert R. Carpenter; George A. Griffin, with Julius King Optical Co; George S. Coe, with United States Express Co.; Kester G. Haines, with Aikin, Lambert & Co.; Leo Loeb, of Loeb Bros.; Cassius W. Seymour; William L. Rich, with Black, Starr & Frost; George N. Wilcox, of Courvoisier-Wilcox Mfg. Co. all of New York City; Henry Ansley, Rockville, Md., and Nicholas L. Feury, Jersey City, N. J.

The reports showed that a very prompt response had been made by the members to the first double assessment for mortuary purposes in the history of the association.

THE TORREY BANKRUPTCY BILL.

WE ARE indebted to the Chicago Jewelers' Association for the following letter, written by a prominent business man of Chicago, and appearing in the *Tribune* of that city on Oct. 13. It covers the ground so thoroughly that we gladly comply with their request to reprint it for the perusal of the trade:

The recent action of the United States Senate in postponing the consideration of the Torrey Bankrupt Bill must have been disappointing to a large majority of the business men of the country. In view of the exhaustive investigation of the measure by the Judiciary Committee of the House of Representatives, the favorable report of said committee in presenting the bill for passage, and its adoption by a decisive vote, it is somewhat surprising that the Senate *after the recommendation of its own judiciary committee*, and having heretofore passed an inferior bankrupt act, known as the Lowell Bill (which, however, failed of enactment in the House) should now, in obedience to the wishes of three or four senators who are opposed to any bankruptcy legislation whatever, delay this equitable and most beneficient measure.

I would like to ask any intelligent business man who is at present indifferent or opposed to the pending bill, what his experience is, if a jobber, under the existing and varying State laws? These various State laws are proven by experience to be complicated and generally favorable to thieving insolvents and rapacious lawyers. Let him examine his books for the percentage of net results in every failure, when there was not a compromise, and he will discover that in all attempted settlements he was at the mercy of the debtor. To secure a proper percentage of our claims, we are handicapped, bound and cowed by the position of the debtor, the advice of his lawyers, the greed and selfishness of the favored few, and following all are the advance costs, retainers and final charges, so that the net amount realized in nine cases out of ten is next to nothing, and in the remaining one it is infinitesimal. Only lately a rascally merchant, in a certain State, where the collection laws are favorable to the resident and the debtor, after having been in business for twenty years, with a good record, and with large means, deliberately planned a failure, and bought largely in several markets. His extensive purchases, becoming known, excited considerable fear, but owing to the character of the law governing just such a condition of affairs in that State, the creditors were powerless until their accounts matured, and just at that time, presto change, the assets had disappeared and the debtor was defiant. Every creditor, including myself, is at present fighting this claim, and there is probably not one chance in ten that a dollar will be realized, though a very large expense has been incurred.

Under a proper national bnnkrupt law this thieving citizen, and with the advice of his lawyers, would not have dared to plan and consummate such a steal. The criminal features of the Torrey Bill, which every intended purchaser of goods on credit will learn of, will prove an obstacle to fraudulent designs, thus protecting honest merchants in prices, and saving creditors from being swindled.

It appears to me that the opposition of a few, a very few, large business firms is based wholly upon a purely personal and selfish standpoint. The mammoth houses that "never compromise," that now are able to secure confessions of judgment, and to force assignments, thereby collecting dollar for dollar, to the total exclusion of other creditors, are the ones that are at the front of the resistance to this proposed law. Is this just? They argue that the present laws answer them, and therefore why do they want a change. Of course not. It is perhaps very well for houses of this class that are in a position to choose their customers, and with perfect machinery for collection, that sell without dating and on short time, who, by reason of their standing and reputation can readily influence any failing debtor to talk this way. But how is it with the ordinary jobbers of clothing and kindred lines, who are compelled by the strife for trade to give long datings and longer time? This latter class absolutely need a uniform system of national bankruptcy. By their system of dating and time they actually furnish the money by which the patrons of these millionaire concerns pay their bills.

I firmly believe the pending national bankrupt law would promote commercial credit, increase commercial intercourse and tend to public policy. It would afford protection against the dishonest debtor, prove a boon to the honest insolvent, and a terror to rascals. Fear of punishment would be a barrier to contemplated fraud, and this law would foster care, caution and prudence with the debtor. The creditor would experience a feeling of certainty in the granting of every credit, in that he would at least secure a part of his claim with no material expense, and should there be no dividend then there would be no court costs or fees of any kind. Under this law there would be no preferences; no confessions of judgment; no anterior transfers of property; but instead the entire estate of the insolvent would be turned over to the bankrupt court. The interests of both debtor and creditor would alike be carefully guarded and distribution made pro rata at a minimum cost. Under this law the honest debtor need have no fear of ruin from attachment or other legal proceedings that would deprive him of future commercial life.

At present the cost of collecting an account against an insolvent, in any State court, is in proportion of about ten to one of what it would be under the new bankrupt law, and the fees paid the registers under the old law were much smaller than the fees that are now allowed assignees by State or County courts.

The present anxiety of "getting in first," often leading to unnecessary suits, attachments and serious trouble, the advancement of costs and legal fees, with generally nothing realized, would be avoided. The "game of grab" will be under ban, and the small creditor, and the large, will be treated alike.

Anyone opposing this Torrey Bill owing to the abuses of the old law will need only to examine it to learn of its many and clear advantages. It is especially framed with a view of making it to the interest of the court to administer the estate of the bankrupt as quickly as possible. The enactment of such a law favors every interest of both debtor and creditor; the former is created by the latter, and under this law both would be treated with equal and exact justice. To say that the dissatisfaction and injury created by the old law is an argument against a new one, is puerile. It might as well be urged that because something was once wrong it can never again be made right.

The pending Torrey Bill is formed with particular reference to the weaknesses of the old act, all of which have been carefully avoided, and is most admirable in general and in detail. It is comprehensive, simple, inexpensive and just. I earnestly hope that every importer, commission merchant, manufacturer, jobber and retailer will extend his best influence and work for the speedy passage of the Torrey Bankrupt Bill.

Fashions in Jewelry

A Lady's Rambles Among the Jewelers.

CORRECT STYLES IN GOLD, GEM SET AND ENAMELED JEWELRY.

SOMETHING akin to the luxury of the Orient is at the present day displayed in the fashionable woman's toilette for evening wear. Not content with the blaze of countless jewels, her very gown is draped with diaphanous fabrics encrusted with imitation brilliants, pearls, torquoises, sapphires, amethysts, and the like.

*** *** ***

THE dress trimmings this season are triumphs in the art of combining needle-work with jewels. These are wonderful and difficult to describe. On satin or velvet grounds, are flowers or motifs worked in relief and varied with what the French term *cabochons*, these *cabochons* being imitation gems and semi-precious stones, uncut.

*** *** ***

THE *cabochons*, which show all the hues of the rainbow, are mounted in a steel setting instead of being sewn on by means of holes inside. This steel setting is not only a novelty but it insures the durability of the jewel-set trimming.

*** *** ***

JEWELS are indeed a marked feature of present fashions; many of the net trimmings display topazes, amethysts, turquoises, imitation emeralds, opals—in a word all kinds of gems intermixed with gold.

*** *** ***

NOW that it is the correct style to decorate ball and full dress gowns with embroidery and laces, enriched by jewels, a perceptible increase is noted in the demand for small but choice colored imitation and semi-precious stones, as well as tiny rare gems.

*** *** ***

WHEN it comes to ornaments for the hair no gem is considered too rare or workmanship too finely wrought. Jewelers appreciating this fact, expend a large amount of ingenuity in producing novelties in this line.

*** *** ***

THE Grecian fillets introduced last season, are an instance at hand where ladies appreciate the efforts made in their behalf. These fillets or tiaras of gold have proven sufficiently popular with the exclusive "Four Hundred" to warrant their offering this autumn with regal effect and with their intrinsic worth greatly enhanced by diamonds and other precious gems.

*** *** ***

EVERY lady who desires a fillet, however, to set off her coiffure, does not of necessity have to select one sparkling with gems. There are some exceedingly charming tiaras, that depend on their artistic shapes and fine workmanship for their attractiveness.

*** *** ***

A PARISIAN novelty in way of hair-pins, consists of gold balls united by chains, an idea taken from the peasantry.

*** *** ***

TORTOISE SHELL hairpins set with diamonds and turquoise, are fashionable.

AN ATTRACTIVE ornament for the coiffure is a dagger of amber-hued tortoise-shell with the hilt encrusted with gems.

*** *** ***

THE butterfly spreads wings of rare lace this season, on which scintillate small gems to correspond or harmonize with those of greater size that form the body of the insect.

*** *** ***

A PRETTY conceit in the way of a jeweled pin, to be worn either as a brooch or ornament in the hair, consists of a small gold dagger set with diamonds at the hilt and point. A chain of interlinked pearls and diamonds is fastened at either side.

*** *** ***

THE fashion of dresses, the bodices of which are cut low in the neck, has rendered a necklace of some sort a necessity, and the jewelers' show-cases are consequently filled with a bewildering variety of these ornaments.

*** *** ***

THERE are unique necklaces of diamonds and rubies in the form of a spray of five orchids, or of five swallows. In both cases the birds and flowers are graduated as to size and are made to unscrew so that each may be worn singly.

*** *** ***

THE orchid remains a favorite model for fine enamel jewelry. In many instances this flower is faithfully copied not only in form and color, but in size.

*** *** ***

GOLD-BEADS continue to be worn and are especially useful with collarless dresses.

*** *** ***

A FANTASY has sprung up for necklaces of colored stones.

*** *** ***

BRACELETS and bangles are as popular as ever.

*** *** ***

A PRETTY bracelet seen was composed of two gold chains, and had as a fastening, two little owls, with plumage in pearls and diamond heads, their blinking eyes being single rubies.

*** *** ***

WATCHES run small to medium in size and there is a marked tendency toward decorative cases. Jewels and colored enamels are favorite modes of ornamentation.

*** *** ***

FOBS with handsome seals and slides, find distinguished favor among men who devote much thought to dress.

*** *** ***

THERE are dainty little fobs especially designed for ladies. These are provided with a swivel at one end for the watch, and a bar at the other to fasten in the button-hole of the bodice. The gold slides are the decorative feature, some being engraved while others are set with gems.

*** *** ***

FASHION seems to move in cycles and many of our latest novelties are merely old friends returning to us, in instance of which may be mentioned chatelaines, clasps, and buckles.

*** *** ***

Among watch chatelaines the novelty is a small affair that expresses itself in form of a flower or other motif, and which is fastened at one side of the corsage.

Ear-rings and ear-screws divide favor, and are small in size.

*** *** ***

Some exceedingly pretty effects are gained in gold filagree work.

*** *** ***

The mourning jewelry made to-day is a marvel in way of artistic designs and fine workmanship. Much of it is finished in enamel; there are also excellent effects gained in carving.

*** *** ***

One of the prettiest among revived patterns is the double-heart crowned with a true lover's knot. Of this double-heart jewelry there is an infinite variety in pearls, turquoises or moonstones, and adorning bangles and brooches, rings, pins, and lockets.

*** *** ***

The recent craze about Jeanne d'Arc has shown itself abroad in various articles of commemorative jewelry. There are brooches in all prices, from the handsome enamel set in diamonds, representing the peasant heroine, to the cheaper effigies of Jeanne in oxidized silver.

*** *** ***

Jewelers returning from abroad are bringing with them handsome gold pieces about the size of a shilling with the head of Jeanne d'Arc in profile. These are designed to hang from watch-chains or bracelets.

*** *** ***

Grape jewelry is new and attractive. The fruit is represented in sardonyx, and appears in both the green and purple state.

*** *** ***

These grapes are attractively mounted as sleeve links, with a gold chain uniting the two grapes.

*** *** ***

A single grape set in a scarf-pin affords an attractive trinket, while a group of three or four with diamond tendrils, makes a pretty brooch.

*** *** ***

Earrings consisting of a single grape are furnished to wear with a grape brooch.

*** *** ***

Many tempting effects have been produced in enamel. Pompadour colors are reproduced with admirable results on chatelaines and other chains, where the links show alternate colors; the faintest tints are most favored.

*** *** ***

Men are wearing more jewelry now than in years before; this is especially true of finger-rings.

*** *** ***

There is decided evidence that a strong effort is being made to render the wedding ring for men popular. Whether it will become a fashion or not depends upon the number of dutiful husbands who are willing to wear this emblem which marks the wearer as a blessing already appropriated.

*** *** ***

The bloodstone and the sard figure in finger rings for men.

*** *** ***

Many women wear seal rings of small to medium size; a seal ring is becoming to the hand, especially if the hand is a large one.

A ring set with a sapphire of oblong shape for a seal, is worthy of notice.

*** *** ***

Seal rings with engraved bands are new.

*** *** ***

The fashion of engagement rings varies from time to time, and depends in part upon the purse of the donor. Where there are no limitations of this sort this taste, if it be perfect, the prospective bridegroom will select a diamond solitaire, white and flawless and of a size to suit the hand for which it is designed.

*** *** ***

Some prefer a ring set with three stones, such as a sapphire between two diamonds, or a sapphire, a diamond, and a ruby.

*** *** ***

The present fancy for heart-shaped jewelry includes heart-shaped rings and lockets.

*** *** ***

The heart-shaped lockets are for the most part made flat, so that they may be worn without inconvenience inside the bodice.

*** *** ***

A pretty and suggestive brooch is a little diamond key with heart shaped top.

*** *** ***

A gift of good augury is a tiny enameled hearts-ease set in a diamond heart, which betokens the thought the name suggests.

Silver Jewelry, Tableware, and Bric-a-Brac.

Silver jewelry this season not only represents many of the new designs wrought in gold, but original patterns especially prepared for silver goods.

*** *** ***

Circular forms in brooches are retained, but the method of treating them is new

*** *** ***

Beautiful effects are wrought in white and colored enamels.

*** *** ***

The forget-me-not figures conspicuously among the flower jewelry.

*** *** ***

A preference is noted for the triangle form in silver, as well as in gold ornaments.

*** *** ***

The chatelaine has, if possible, increased in importance. Some of the newest designs are copies of antiques and are merely short, fob-like affairs.

*** *** ***

Silver mounted bags show quite new designs.

*** *** ***

Silver girdles are used for looping up skirt draperies.

*** *** ***

The increasing disposition toward silver not only for personal wear, but for decorative purposes, is everywhere apparent. It serves as a mounting where the article may not be entirely composed of the metal.

SILVER has taken possession of writing-desks and library tables, in witness whereof, is an endless line of silver-mounted inkstands, pen-rests, gum-bottles, letter-scales, paper-weights, knives, book-marks, etc.

*** *** ***

SILVER filagree boxes divided into compartments, are novelties in the way of stamp and pin receptacles.

*** *** ***

THE dressing-tables for boudoirs, are many of them notable exhibitions, on a small scale, of some of the best work of the silversmith's craft.

*** *** ***

A CHARMING novelty for the toilet table is a powder puff of finest swan's down mounted on a richly chased silver handle, to which it is apparently fastened with a ribbon-bow. The white down, colored bit of ribbon and the silver, form a pleasing combination.

*** *** ***

SOME of the newer hair-pin receivers and puff and powder boxes, have covers decorated with copies of rare old coins.

*** *** ***

SILVER-TRIMMED photograph frames, blotting-pads and note-books of calf-skin, are novelties in leather goods.

*** *** ***

SHARK-SKIN with silver mounts is a pleasing vanity.

*** *** ***

SILVER again serves as a mounting to the handles of sticks, whips, crops and umbrellas.

*** *** ***

THE fashionable craze for collecting a miscellaneous assortment of knick-knacks, of more or less antiquity, has created a demand for faithful copies; hence, one now sees in modern goods "Queen Anne" and "Georgian" jugs, boxes and mirror frames; "Jacobite" shoe buckles and similar revivals.

*** *** ***

BUCKLES *a la* Nuremberg, of modern make, are far more beautiful than the clumsy and badly wrought originals.

*** *** ***

IN CANDELABRA and candlesticks are reproductions in silver that possess all the beauties of unearthed treasures in the nature of Venetian church plate or old English pieces of former generations.

*** *** ***

THE new table ware, is much of it characterised by bright finish. This is generally accompanied with more or less repoussée decoration; pierced or open-work borders are also of frequent occurrence.

*** *** ***

ON THE handles of some of the new spoons, forks and knives are wrought, in relief mythological figures.

*** *** ***

A NOVELTY in silver lamps consists of an urn-shaped bowl mounted on a fluted column of silver.

*** *** ***

THE pie knife is this season called upon to compete for favor with a rival called the pie server. The latter has a thin flexible blade and is adapted also for serving cake, waffles, etc.

*** *** ***

A SILVER saw with which to cut the wedding cake, is a suggestive present for a bride.

FOR the dinner table, there are silver jardinieres of unique form.

*** *** ***

DECANTER and claret jugs, overlaid with grapes and their foliage, in silver, by the new electro deposit treatment, are a pleasing feature in the show window and exhibitions.

Art Goods, China, Glass, &c.

CUT glass is naturally compared with diamonds, for it is dependant for its worth on its purity, absence of color and perfection o cutting.

*** *** ***

CUT glass is a natural adjunct of silver and the two ought always to be found together.

*** *** ***

THE modern dinner table is as dependant on its glass ware as it is on its silver.

*** *** ***

A LARGE class of housekeepers, when they cannot afford certain articles of table ware in silver, find solace and contentment in these articles as produced by first-class manufacturers in fine glass.

*** *** ***

AMONG new patterns attracting attention in cut glass, are the "Sultana" and the Parisian." The "Puritan" is also a late design.

*** *** ***

WHEN one is in doubt which to select, a finely-cut glass article or a silver one, a graceful compromise may be made in choosing glass with silver trimmings.

*** *** ***

WINE-GLASSES with silver garlands of grapes and their leaves twining about them and bowl, are attractive illustrations of the effects of silver and glass combined.

*** *** ***

IN ANTICIPATION of the holidays artistic pottery is again to the fore.

*** *** ***

IN ROYAL Worcester appear some entirely novel decorations in which field flowers provide the motif.

*** *** ***

BISQUE figures and busts have lost none of their popularity.

*** *** ***

WHERE grotesque shapes are desired, the Teplitz pottery affords a wide scope for selection.

*** *** ***

TAPESTRY ware, as the name suggests, exhibits in its ornamentation the rare coloring and designs found in old tapestries.

*** *** ***

MOORISH faience is not only attractive from its peculiar decoration but from its good shapes.

*** *** ***

ART porcelain resembling the finest of carved ivory, is represented in historic and fancy heads, busts and statuettes. It also comes in vases and other mantle ornaments.

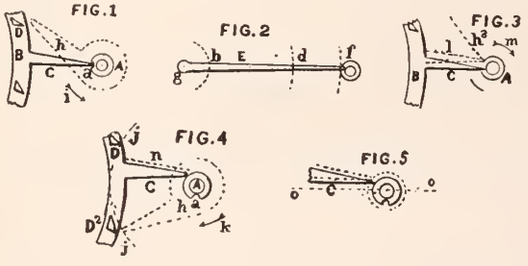
ELSIE BEE.

Advice to Watchmakers' Apprentices.

BY A MAN WHO HAS SPENT TWENTY YEARS AT THE BENCH.

THE duplex escapement is not difficult to understand or repair if once its principle is thoroughly understood. Let us consider the action of the duplex escapement. A very casual examination will show us that the long teeth of the escape wheel cannot pass the small roller on the lower part of the staff, except by egress through the slot. The idea with the duplex escapemcnt is a long slim resting tooth engages the staff of the balance, and rests on it with but slight friction, from two causes; first the long tooth *C* is at considerable distance from its center, which will be understood from inspecting fig. 2, where *E* represents the lever which conveys the power to the balance, the center of which is located at *f*. It will be seen that the line *b* represents the line where the fourth wheel applies the power of the train to the escape wheel, and the line *d* the impulse teeth which imparts momentum to the balance. It is evident that the lengthening of the arm *E* from the line *d* diminishes the power, and consequently the friction of the tooth on the jewel.

The action of the tooth *C*, fig. 1, is a little complicated, but yet easily understood if we carry the process of escaping through the condition involved. Let us first conceive the several parts are in the positions shown in fig. 1; here resting-tooth *C* lies in the slot *a* of the roller, and the impulse pallet is indicated by the dotted lines at *h;* the slightest motion of the balance in the direction of the arrow *i* allows the tooth *C* to escape out of the slot, and at the same time the impulse pallet *h* has passed inside of the impulse tooth *D* so



that it engages *D* carrying it forward until the impulse tooth is free of the impulse pallet, and another long resting tooth encounters and rests on the roller jewel *A*. The passing slot *a* is now in the position shown in fig. 4.

The balance-spring will now gradually overcome the momentum imparted by the impulse tooth *D*, and the balance will return carrying the impulse pallet (*h*, fig. 1) back through the arc *j*, fig. 4, just clearing the back of the triangular-shaped tooth D^2. A resting-tooth again falls into the slot at *a*, but the impetus of the balance causes the tooth *C*, although resting in the slot, to retrograde to the position indicated at the dotted line *l*, fig. 3. In putting duplex-escapement in beat the balance spring stud is set so the impulse pallet, when in a state of rest, is located about as indicated at the dotted lines *h*, fig. 1. When this condition exists we will usually have to move the balance in the direction of the arrow *m*, fig. 3, until the impulse pallet stands about as indicated at the dotted *h*, before the resting-tooth *C* will fall into the slot; this arc will just about be equal to the one the balance will make to free the impulse tooth *D* in the opposite direction. The entire "*rational*" of the action is, that there should be no more lost motion in any of the actions than just enough to allow the several movements to be free.

I promised to give the proportions of the duplex escapement, recommended by several high authorities. They are as follows —diameter of the roller relative to the distance between the tips of two resting-teeth:

Jurgenson, $\frac{1}{3}$.
Moinet, $\frac{2}{7}$.
Ganney, $\frac{1}{5}$.
Saunier, $\frac{1}{4}$.

Length of the impulse pallets, from the center of the balance staff, is $\frac{3}{8}$ of the radius of the locking wheel. The relative sizes of the locking and impulse wheels are as 3 to 2, some writers say as 4 to 3. The impulse tooth is usually placed equi-distant between the locking teeth. Such proportions are only a general guide, as all makers vary a little, and the workman who has to repair the production of all makers can only take the escapements as he finds them and get the most he can out of them. For, instance, if he finds a roller varying much from the proportions stated above, he can, as a rule, generally conceive the change has been made in repairing; if he finds a roller of unusual large size it is perfectly safe to conclude that some workman has been "topping" the scape wheel—that is cutting away the ends of the teeth to equalize them, after which he found the roller so small that the teeth failed to engage the roller at all; to remedy this a larger roller was placed on the staff. Now let us see how this would effect the escapement. We will suppose the several parts are in the positions shown in fig. 4, and the impulse pallet is located as indicated at the dotted lines *h*, it will occur to the reader instantly that a large roller would cause the tooth *C* to occupy the position indicated by the dotted line *n*—that is, if only a safe lock was established. My meaning will be understood by examining fig. 5, where the full lines represent the original tooth and roller as related to each other, and the positions assumed by the new tooth and roller are indicated by the dotted lines.

Theoretically, the tooth in both instances can be allowed to approach the position of the dotted line *o* to the same distance, but with the larger roller the danger of catching and being locked or carried over is greatly enhanced, and the friction is also much greater. If (as is the general rule) one-sixth of the roller diameter is allowed for the engaging pitch, the tooth would occupy the position shown at the dotted line *n*, and would cause the impulse pallet to strike the back of the impulse tooth, shown at D^2. The safer plan is either to put in a new scape wheel, or to set the balance closer to the escape wheel. Some workmen will attempt to stretch the teeth of the escape wheel, a job very difficult to accomplish satisfactorily, as the process of stretching usually destroys the correct spacing of the teeth, and leads to no end of trouble. Placing the balance and staff in position, without a hair spring, will usually enable one to arrive at most of the difficulties which beset the duplex escapement. A duplex movement in this condition will allow the balance to turn rapidly in one direction—that is in the direction of the arrow *i*, fig. 1.

The success of the Waterbury watch warrants the belief that other cheap watches of this kind of escapement will follow, and for this reason the writer earnestly hopes the reader will follow the expose of principles of action of this escapement, as I have described it. So far I have confined myself to general principles; in my next communication, however, I will explain in more minute detail the several actions, and will instruct the reader how to draw a duplex escapement, which, after all, is the best way to master a theme of this kind.

RUBY MINES OF SIAM.—A company has been formed for working the ruby and sapphire mines of Siam. Edwin M. Streeter, in his report, says that the relative situation of the ruby and sapphire mines of Chantaboon and Batumbong may be compared to the Burmese mines of Thabeitkin and Mogot, the home of the finest colored Burmese rubies. The sapphires from the Philim River and from the Baw Pie Rim mine are the best and of the finest cornflower-blue color of any sapphire known in the trade; five-eighths of the sapphires sold come from this mine. The Burmese sapphires are very velvety, but blackish, while those from Ceylon are nearly all silky and party-colored; hence the demand for Siam stones. The demand for really fine sapphires is larger than the supply.

PARIS GOSSIP.

[From Our Special Correspondent.]

EXPORT TRADE AND SOUTH AMERICAN EMBROILMENTS—TEUTONIC COMPETITION IN CHEAP GOODS—A GLANCE AT THE SHOW WINDOWS OF THE PALAIS ROYAL.

Paris, France, October 10, 1890.

Business in export lines has been very brisk this year, but is now slackening for a time, at least with South America. Manufacturers who deal chiefly in well finished articles will suffer most. Semi-artistic goods have sold comparatively well in the Argentine Republic, and as long as our jewelers and silversmiths can manage to devise elegant novelties they can obtain pretty large orders from factors who supply Buenos Ayres retailers with *articles de Paris*. We still hope that the sad turn of political affairs in that quarter will not long interfere with business, yet some of our manufacturers seem very anxious about it. Manufacturers of cheap articles are fairly occupied with orders from Spain and the French colonies, although in some cases they find it somewhat difficult to compete with Germany. The only way for us to keep our own ground is to display as great taste and variety in the cheap lines as we do in the other.

If I understand rightly how our neighbors of the continent manage it the divi- of labor is carried there so far that the work is done by mere machines, two-legged ones as well as others. Goods manufactured in that way are bound to come very cheap, and must be easily made in large quantities, but, although some pretty patterns may be devised by the artist of the place, and even prove rather taking at the first, the repetition *ad nauseam* of the same designs cannot fail to depreciate them rapidly.

I have had lately a good look round to find out the most striking novelties. I noticed at a shop window in the Palais Royal some pretty articles of jewelry. They are a curious imitation of Mosaic work. Studs, brooches and earrings of circular shape, exhibit flowers in very slight relief, the bright hues, tastefully contrasted being obtained with enamel, yet the whole work appears like a collection of tiny stones of different colors, some being sunk deeper than others, and all being well cut and rounded with a view to give a natural effect.

In another place there is an important display of brooches, exhibiting portraits of celebrated beauties, most of them belonging to the eighteenth century. Some of these paintings are most daintily done, and with an evident *parti-pris* on the part of the artist to avoid over-bright colors, so as to convey the impression that the portrait really is an old one. The frames, showing a great variety of outlines, are all very graceful. Some, in varicolored chased gold, are in the rococo style, with a diamond sparkling here and there, and some have the shape of a Louis XVI. medallion, with a bow-knot at the top and tiny drooping garlands on the sides.

Knife handles in ivory and mother-of-pearl are now decorated in all kinds of ways, some being engraved in the Louis XV., or rather the Regence style. The ornaments, finely cut, are well shaded, and come out prettily in black or blue on the white background of the ivory or the lustrous mother-of-pearl. Inlayings of gold and silver, showing cadricious and elegant designs, are also very taking, especially if they are variously colored. The most fashionable among these knife handles simply exhibit at the top and around the base a silver ornament obtained by stamping or repousse work. Unpolished ebony handles adorned in this way have also proved very successful lately.

Ivory pocketbooks, *carnets de bal*, etc., are decorated in a very elegant manner. The upper side generally shows a conventional foliage in oxidized chased silver of Renaissance style. It occupies, as a rule, the left angle at the base and spreads toward the centre. Albums and prayer-books with ivory covers are sometimes richly adorned with inlayings or applications of enamelled gold in a luxuriant or singular Gothic style, reminding one of the most remarkable among the ornaments which run around the page margins of an old missal.



CANDELABRUM OF OXIDIZED SILVER.

Our Figure reproduces a very fine candelabrum in oxidized silver, designed by Mathurin Moreau. What is above all worthy of remark here is that the figure introduced in the work should not be a mere *hors d'oeuvre*, or addition intended to enhance its beauty. It belongs to it so thoroughly that the whole structure of the piece would have to be altered if the figure were removed. All the details remind us of the rococo style, from which our silversmiths cannot easily escape; but there is in the ensemble, thanks to the sculptor, something at once bold and noble never to be seen in Louis XV. works.

Several members of the Union Centrale des Arts Decoratifs havecome to the conclusion that something might be done to attract to their museum all artisans who ought to find something to learn there. Accordingly, *conferences promenades* have been started. M. Germain Bapst, the indefatigable lecturer, opened the interesting series, and, undoubtedly, the artisan jewelers and silversmiths who were able to get near him on that occasion, and to follow all his explanations, will never regret the hour they spent at the Palais de l Industrie.

Jaseur.

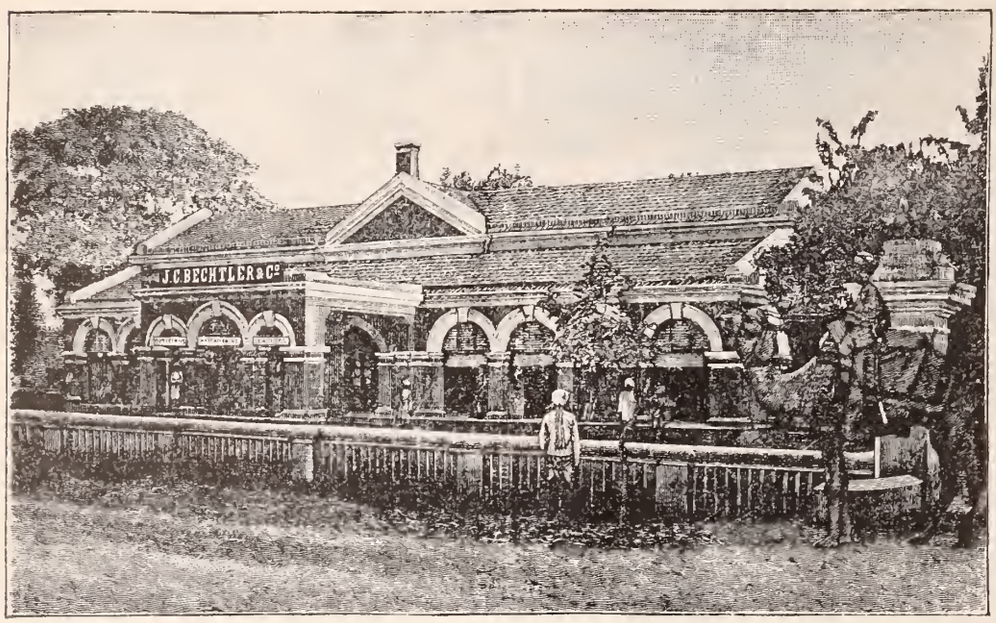
Much Wealth,—"Charity begins at home," this is true as well of gossip items as of "the chief among the blessed three." In 1887, the value of the metals mined in the U. S. was estimated at $250,000,000, and that of the minerals of every kind, including the natural gas and mineral waters, at $288,000,000, as against $206,000,000 in 1886. Although precious metals are also found in the Alleghanies, the principal states where gold is found are California, Colorado, and Dakota, while Colorado, Nevada, Utah and Montana, are richest in silver. The proportion in the yield of gold and silver has changed entirely since 1860; for the decade from 1850 to 1859, $555,000,000 gold, and $550,000,000 silver were mined. The two decades from 1860 to 1879 showed a decided change, $870,000,000 gold and $442,000,000 silver; from 1880 to 1887 only $264,000,000 gold and $375,000,000 silver. In the year 1887, the mines furnished $33,100,000 gold and $53,400,000 silver. The values of coal and iron are still much more important, however.

COMMUNICATIONS

[THE CIRCULAR is not responsible for the opinions or statements of contributors, but is willing to accord space to all who desire to write on subjects of interest to the jewelry trade. All communications must be accompanied by a responsible name as a guarantee of good faith. No attention will be paid to anonymous letters. Correspondence solicited.]

BLOW YOUR OWN HORN.

THE JEWELERS' CIRCULAR has friends in far-away countries of the globe, who look for its monthly visits as eagerly as those nearer home. One of these distant readers, a wholesale jeweler in Allahabad, India, addresses us this month a few lines of greeting, bearing willing testimony to the usefulness of our publication even in those remote regions. Our advertisers will find therein proof that their announcements are read there with interest, and lead directly to the introduction of American goods abroad. They have not cast their bread upon the waters in vain. It is returning to them, and that after few days. The CIRCULAR may say in passing that its subscription-list contains names of jewelers in Australia, Japan, Nicaragua, Hawaii Islands, several states of South America, Mexico, and in most of the countries of Europe, including Russia. The illustration below gives an exact reproduction of our correspondent's store.



BY APPOINTMENT.

Allahabad, India, Sept. 8th, 1890.

To the Editor of the Jewelers' Circular:

We want your paper, also for the following year (1891), and when the subscription becomes due kindly let us know so that we can send it in time. * * * We have received several catalogues from American firms; some of the goods seem to suit this market, and in our next catalogue (Xmas, 1891,) we intend to introduce some of these American goods.

We understand the American Silver Bill is not to your advantage, but here it has risen the rupee from 1s. 4d. to 1s. 9d., and it is expected that the rupee will again be worth 2s. For this we have to thank your Silver Bill. Yours truly,

J. C. BECHTLER & CO.

REMOVING SOFT SOLDER FROM GOLD.

SANDUSKY, O., October 13.

To the Editor of the Jewelers' Circular:

Would you please state in your next issue what is the best thing to remove soft solder from gold and oblige Respectfully yours, H. D.

The destruction of solder is affected as follows, take

Sulphate of iron	2	ounces
Nitrate of potash	1	"
Water	10	"

Reduce the sulphate (or rather proto-sulphate) of iron (green copperas) and nitrate of potassa to a fine powder, then add these ingredients to the water, and boil the preparation in a cast-iron sauce-pan for some time; afterwards allow the liquid to cool, and in doing so it will shoot into fine crystals; if any of the liquid should remain uncrystalized, pour it from the crystals and again heat it, when, on cooling a second time, it will all have become crystalized. The crystalized salt should then be taken and dissolved in hydrochloric acid, in the proportion of one ounce of salt to eight ounces of acid. Now take of the latter preparation one ounce, and add it to four ounces of boiling water in a pipkin, keeping up the heat by the means already stated. In a short space of time the most obstinate cases of soft solder will be clearly and entirely removed, and without the work changing color, if these instructions are properly carried out in preparing the mixtures, &c.

Chemistry in Egypt.

THE priests of Thebes and Memphis made great advances in theowknledge of the art of extracting metals, of forming alloys, and of making vessels and tools out of them. They distinguished crude gold from refined gold, and could work that metal up into a variety of articles. They led the hope that they might be able to obtain it by coloring asemon, or silver, yellow. Of the latter metal they made money, the value of which was guaranteed by an impressed image. They extracted gold and silver from electrum, a mineral containing both substances, but which presented to their eyes the appearance of a metal like them. This was what led them to the notion of transmutation.

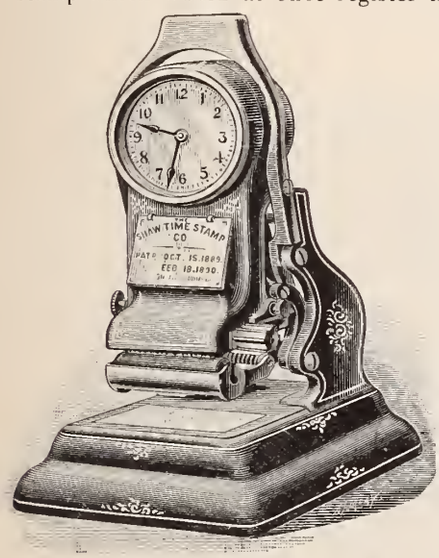
The Egyptians designated as chesbet several kinds of blue or green sapphires colored with cobalt or copper. They made incrustations, amulets, necklaces, and various ornaments of them. They succeeded in compounding an artificial chesbet resembling the natural stone. A fact worthy of remark in the matter is that this was done by the assimilation of a colored substance, a precious stone, an enamel, a vitrified color, with metals.

This assimilation suggested the new idea of dyeing; for the imitation of the sapphire rests on the coloring of a large mass, colorless by itself, but constituting the viterfiable basis, which we dye by the aid of a small quantity of coloring matter. With enamels and colored glasses thus prepared, the natural precious stones were reproduced; they were covered with figures, with objects of earth or stone, and were incrusted with metallic objects.—*M. L. Oliver in Popular Science Monthly.*



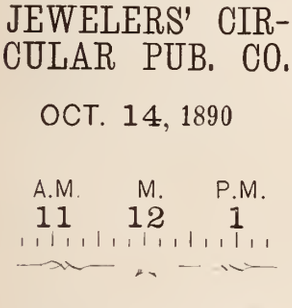
THE SHAW TIME STAMP.

IN all branches of business disputes arise as to the exact time of day of certain transactions, such as mailing or receiving letters, sending or receiving telegrams, serving legal papers, signing receipts, delivering or receiving goods, time of day documents go into effect, the time of workmen in mills or workshops, shipping goods and numerous other questions relative to time. In the past twenty years many attempts have been made to perfect a stamp which would at once register the time of such transactions accurately and also the nature of the transaction. Up to within a few months ago, however, these attempts had been unsuccessful. The first time stamp invented consisted of a gang of wheels on a single arbor actuated by a lock movement letting off the hours by intermittent motion. A special movement was required, and if the change happened to be taking place at the moment when an impression was being taken, a false registration would result. Another and insurmountable objection to this was found in the close connection of the gear with the clock movement. As the stamp was operated by a blow, the clock movement was soon deranged and made useless for time keeping purposes.



THE SHAW TIME STAMP.

Many inventors have since worked on this same principle, but all have failed to produce a practical and reliable stamp, because, not being watchmakers, they did not take into account the effect of the jar or concussion on the timepiece. The only one of the various stamps invented which ever came into use was the Emerson stamp. In this the movement was under the stamp and the concussion was partially neutralized by means of a spring placed underneath the hands But even this was not a success, and its manufacture was soon abandoned.



It has been reserved for a watchmaker, Chas. H. Shaw, of Brooklyn, to perfect a practical, simple, and reliable time stamp. For the past four years Mr. Shaw has been engaged on this vexed problem and at last his efforts have been crowned with success, his final patent having been granted in February, 1890. To avoid the difficulties encountered by his predecessors, he started on an entirely new principle, adopting the lever action instead of the blow action, which had been found so fatal to the time-keeping qualities of the clock. In the Shaw stamp a band of rubber backed with linen runs over a pulley attached to the hour wheel arbor. This band is made just twice the length of the circumference of the pulley, giving the two sets of figures, A. M. and P. M. The hour wheel turns round once in 12 hours, while the band takes 24 hours to make a complete revolution. To obviate any inaccuracy from stretching, the band is made loose and is held in position by means of pins on the wheel engaging in holes in the band. Thus the exact time is given. The printing operation is performed by means of a lever encircling the stamp and having its fulcrum at the side of the clock. When the lever is pulled forward the stamp moves forward and downward, still maintaining the vertical position, while at the same time the inking roll below moves backward over the stamp and supplies it with ink. Only slight pressure is needed. The time is indicated by figures on the band traveling by a fixed indicator. The dial plate is so arranged that it will print the year, the month, the day of the month, hour and minutes, as well as the nature of the transaction, such as "Received," "Filed," "Answered," "Shipped," etc. These words are fixed on a little grooved arbor, and any six appropriate to the particular line of business may be selected.

The merits of the stamp are obvious. It is simple, easily operated, and reliable. The movement used which is of Ansonia make, can be purchased in the open market, is strong and accurate as a timekeeper. If the clock gets out of order it can be repaired or even replaced at small cost. Any watchmaker could quickly set one of these stamps to rights.

Steps are being taken to manufacture them on a large scale. The following extract is from the decision of the Examiner in-Chief at the Patent Office.

"Applicant has for the first time employed a printing band, with a Time Stamp, and so constructed and arranged the parts, as to give a substantially new machine, which at once commends itself to the judgment of all, as it does that of the examiner, and is distinctive and possesses the quality above suggested, and is more compact, simple and cheaper of construction and better adapted to the ends aimed at and required, than any of the old type wheel character."

WATCHMAKERS' TWEEZERS.

THE illustration below represents an improved watchmakers' tweezers, the invention of R. H. Franklin, Brooklyn, N. Y., to whom letters-patent were granted September 30. The device is self-adjusting, and is constructed substantially on the same principle as the well-known Birch universal watch-key.

The slight range of opening of the jaws of the watch-key, together with the wide dimensions necessary for inclosing the posts of the watch, enable practicable keys to be produced with a small case, which is unobjectionable as to size, the width of the material furnishing the grip for the strength with less thickness than would



otherwise be required, as the size of the tube being smaller in proportion as the range of opening is short; but the jaws occupy nearly the whole area of the bore of the tube in order to have the required width for inclosing the post, and in order to be able to open they have to taper in the plane of their opening as well as at the back, which, although not materially objectionable in the short-range jaws of watch-keys, both in the opening and the lengthwise movement, would be fatal in the case of jaws necessarily having the much longer range, which tweezer-jaws must have in both ways, for they would not close accurately on each other and would fail to hold objects such as the instrument is designed to handle, owing to the slack side fit of the jaws in the tube.

While it is true that tweezers might be made on the plan of the watch-key that would have the proper range of opening for tweezers, such tweezers would be unsatisfactory, because the case would be too large and clumsy for practical use. The present device has the necessary range of opening for such instruments and in practicable size of the case by reason of the jaws being much thinner in the plane of the division between them than the watch-key jaws must be for their purposes and wider in the other direction than the case, and also by the case being slotted some distance back from the end

The invention has been assigned to C. C. Cummings (John S. Birch & Co.); the blades are made of fine steel, and the handles are finished in a manner to prevent slipping in the fingers. Both blades and handles are nickel-plated.

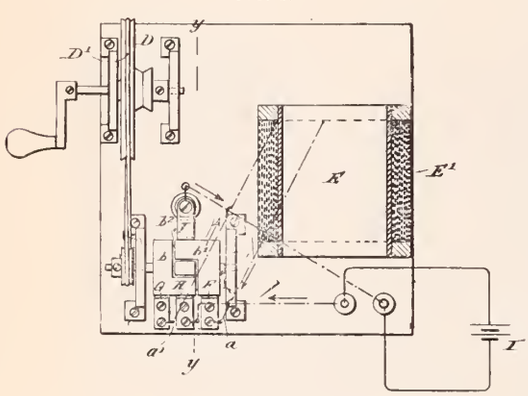
THE BERLIN WATCH DEMAGNETIZER.

ON SEPTEMBER 9th letters patent were granted on the above-specified device to Charles F. Berlin, assignor to Alfred C. Smith, New York. This apparatus has been upon the market for about a year, and its reception by the trade has been such as to warrant its manufacture on an extensive scale. With a number of improvements recently effected in its construction, it can be relied upon to reduce the traces of magnetism in watches to the lowest minimum, and that without injury to the most delicate parts of the time-keeper.

According to the specifications the device is especially adapted for use by watchmakers and jewelers for demagnetizing watches and other articles; and the invention consists, principally, in combining with a demagnetizing chamber composed of or surrounded by a coil of insulated wire, a rheotrope acting in connection with plates or brushes to reverse, in rapid succession, a current of electricity from any source, causing it to alternately pass in opposite directions through the coil.

Figure 1 is a plain view of the demagnetizer, the demagnetizing chamber being shown in section. Fig. 2 is a sectional elevation on line *y y* of fig. 1, showing the current reverses in neutral position.

FIG. 1.



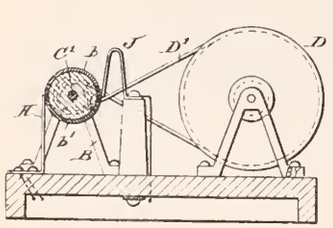


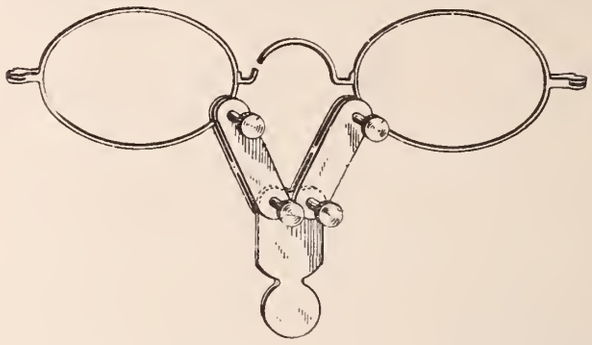
FIG. 2.

The article to be demagnetized is passed through the demagnetizing chamber *E*, surrounded by a coil *E'* of fine insulated wire, one terminal *a* of which is connected to the brush or plate *F*, the other *a'* with the brush or plate *G*, both of which plates are in constant contact with the rheotrope, but owing to the space b^2 between the two metal jackets *b b'* are never in electrical connection with each other. Between the two brushes or plates *F G* and pressing against the rheotrope is another brush or plate *H*, which is connected by a wire to one pole of the battery *I*, and on the opposite side of the rheotrope and pressing against it is still another brush or plate *J*, connected by a wire to the other pole of the battery (as illustrated in figure 1), so that when the rheotrope is revolved the jackets *b b'* thereof, being overlapped at the center, alternately connect the brush or plate *J* with the plates *F G*, and thus reverse the electric current.

In use, to demagnetize any article it is only necessary to turn the wheel *D* by its crank, which will rapidly revolve the rheotrope and cause alternate currents to pass through the coil *E'*, and at the same time pass the watch or other article slowly through the magnetizing chamber *E*. Either arc or incandescent electric currents can be used, although the incandescent current is preferable. This machine is made for work, and has a very large magnetic power.

TOOL FOR JEWELERS' USE.

THE device illustrated below appears to possess many qualities worthy of the consideration of the trade. The device consists of clamps for holding small articles or parts in juxtaposition whereby they may be united, as desired, it being particularly designed for



holding the rims of spectacles and eyeglasses, although it may, as is apparent, be utilized for other small work.

The figure is a perspective view of the clamping device, illustrating a manner of its use. It consists of a handle or stock, and two clamping-arms pivotally connected to one of its extremities in a manner to be swung thereon at varying angles thereto and to each other, and adapted to be confined against movement when in adjustment, each arm having at its outer extremity two separate members adapted to clamp between them the article to be held, and provided with means for securing a drawing together thereof.

Erastus N. Parker, Springfield, Mass., is the patentee (August 26, 1890).

Horological Nomenclature.

WHILE visiting the Parsons' Horological Institute at LaPorte, Ind. on Sept 29, J. H. Purdy, of Chicago, was requested to interest students upon any appropriate subject. He chose the subject of the names, claiming that in no trade or profession was there such a babble of names as in watchmaking, resulting in much confusion in both the mechanical and mercantile departments of this branch of industry. He claimed that no better place for reform could be selected than a large school devoted to the instruction of the scientific art of horology. Beginning at the source of power of the watch, namely the main spring, he named each part of a watch in order, gave each the various names used, and the correct one, and each time quoted authority where a question could arise. A ratchet wheel was changed to a ratch on an old English authority, and because a word was needed to cover other shapes than a wheel. The following are among the changes: Click changed to detent; dial wheel stud to boss; pallet staff to pallet arbor; balance staff to balance arbor; hair spring to balance spring; roller to table; roller jewel to jewel coin; minute wheel to dial change wheel; vibrating arm to yoke; crown wheel to control wheel; beveled pinion to winding pinion; beveled or straight end stone to cap jewel, etc., etc.

The address met with hearty applause, and Mr. Parsons and his assistants were so well pleased with the authorities quoted that they have decided that their institution shall be the pioneer in adopting correct names, as well as the pioneer horological school of America.

E. A. GARLAND, a Wisconsin man, has invented a peculiar clock. It consists of three egg-shells set on pivots, one to denote the hour, one the minutes, and the other the seconds. The shells revolve on the pivots without apparent mechanism to give them motion. Mr. Garland intends making one with glass balls with an incandescent lamp hanging in each, so the clock may serve as a lamp as well as a timepiece.

Universal Astronomical Clock.

A FRENCH watchmaker, A S. Jordan, has constructed the very ingenious timepiece shown in the accompanying illustration. Without entering into discussion concerning the choice of an initial international meridian and the adoption of universal time, the readers of the CIRCULAR will readily see that it is always of interest, and, indeed, sometimes of great pecuniary benefit, to know at a given moment what time it is at a certain spot in "this valley of tears." A merchant or other dealer is occasionally vitally interested in knowing the time in some remote locality—to know, for instance, whether a telegraphic dispatch would arrive there in daytime or at night, or whether in the forenoon or afternoon. Every schoolboy knows that these differences in time are caused by the rotation of the earth.

Although the calculation for ascertaining the time at a certain remote locality is not very difficult, still there are many either unacquainted with the formula or too indolent to do it, and, in order to



UNIVERSAL ASTRONOMICAL CLOCK.

meet the wants of these two large classes, the inventor has constructed the apparatus shown in accompanying sketch. It consists of a sphere representing the earth, on which the location of the cities are prominently shown in such a manner that they may easily be found without great search. This globe reposes on a kind of dome or cupola, the base of which is divided parallel to the equator, in twice twelve hours, and graduated in the direction of the motion of the earth—that is, from west to east. One-half of this universal dial is white, to represent the hours of the day—the other half is black, corresponding to the hours of night. The globe, which is actuated by a clock movement inclosed in the dome, makes one complete revolution around its axis in twenty-four hours, similar to the earth. The clockwork is wound every week.

From this disposition it is plain that, when a given locality stands exactly over its local time, all other points naturally stand at that in proportion to the former; this continues as long as the globe is left in this position, and thus accomplishes regularly its revolution around its axis.

The gold hand *L* indicates the local hour, and corresponds to the gold meridian *I*, which passes through the spot inhabited by the operator. When he desires to know the time of a given place he rotates this place slowly before him by slowly turning the whole apparatus, which pivots upon its socket, without in the least disturbing its going. He then places the right edge of the silver meridian *M*, which is movable and independent, upon the center of the locality, and the silver hand *m* with which it is furnished then indicates exactly the mean hour. The words day, night, morning, evening, noon, midnight, indicates the condition of the time, and is further assisted by the color of the dial; all the countries above the white portion, of course have day, while those above the black are shrouded in night.

This universal timepiece may be used anywhere on the earth; the local time hand and its meridian which may be displaced at will, correspond exactly to the place inhabited by the operator. A gold circle, divided into 360°, represents the equator, the zero of which is fixed upon the local meridian, so that the longitudes may at will be counted to start from any point whatever as the initial meridian. The movable and independent meridian *M* indicates the latitudes and the zones, the separations of which mark the tropics and polar circles. The longitudes, the hours of which are indicated by the hand *m* of the movable meridian, are read upon the equator at the intersection of the graduated edge of this meridian.

The apparatus without clockwork will furnish the same data, except the local time, by setting it previously by hand to the time of the place of the operator. Besides this, its proper function, it is of great utility in the teacher's hands. This ingenious invention of Mr Jourdan replaces a clock to great advantage, becauase—if executed carefully and with good taste—it may be made a highly ornamental piece in parlor or hall.

Novel Combination Between Fork and Balance.

EVERY one of my fellow-watchmakers, says F. K. Kaltemthaler, in his Imperial German patent No. 53,362, recently granted, knows that it requires generally a great deal of time to correct a faulty anchor escapement, because the depthing of the pallets into the scape-wheel and that of the fork into the ruby pin are rigid. It was therefore proposed by a watchmaker, several years ago, to place the lower balance-pivot in a separate movable counter-bridge, similar to that used in a cylinder escapement; by means of such a bridge the fork depthing might then be regulated very readily. The introduction of this counter-bridge, however, was until now not advisable for the reason that the upper balance bridge of anchor watches has on account of the contracted room, a very small foot, which would have found but an insufficient hold on the counter bridge.

I made my aim to try by a new way of placing the balance-staff, to gain a larger space for the foot of the upper balance bridge, so as to render possible in this manner the location of above-mentioned counter-bridge for the regulating of the fork depthing. By this new arrangement the balance is moved about one diameter of the impulse roller nearer to the point of rotation of the anchor and anchor fork, whereby more room is gained for the foot of the upper balance bridge.

As will be seen from accompanying cut, I have obtained my purpose by placing the axis *a* of the balance and impulse rollers *S* between the rotating point and the outer end of the fork *G*. This disposition calls for a somewhat changed form of the fork, by making it at its end in the form of an arc, which must be large enough to permit the ruby pin *h* with each position of the fork to vibrate freely within this arched part of the fork. (On account of greater plainness the arc *b* was, so as not to come together with the left half of the impulse roller, sketched larger than it really is. In practice, of course, the fork is made a light as possible.) Since the fork stands in this manner in a so-called "interior depthing," with the ruby pin, the friction of the latter in the fork is at the same time diminished during the unlocking. As is known, it happens occasionally that the inner face of forks is found rusted in watches which have gone for some

time; it may be confidently asserted that this is unlikely to happen in my arrangement.

The device has been patented as an anchor escapement with diminished friction.

The Melting of Gold.

THE melting of gold is a work performed nearly every day in the goldsmith shop, and would hardly be considered as one occasioning great difficulty. Larger quantities are melted in a crucible, either in a coal fire or in a gas furnace. This method, where gas is cheap, is to be highly recommended, on account of great convenience and cleanliness.

MELTING ON COAL.

It is really a cause of astonishment that there are so many shops into which the melting of gold on coal has not yet been introduced, although it will be seen at a glance that it must be very convenient—of course when a small quantity only is to be melted; from 25 to 30 grams (16 to 19 dws.) may be melted on a piece of coal. The round branch coals are to be preferred. See that they are thoroughly charred, and contain no cracks. Cut one end obliquely and in it make a medium deep hole, into which lay the gold. In order to keep out the air and confine the heat within, put on a small covering coal. As in the procedure when using a crucible, add the alloy only when the gold is in a fusing state; the labor of the operation may be facilitated by adding a small piece of borax.

PROPERTY OF BORAX AND SALTPETRE.

Borax has the property of slightly dulling the color of the gold, and, if a lively color is desired, add also a little saltpetre—but only a little, as this agent attacks the copper as alloy, especially when preparing red gold. This effect might be prevented by adding a little charcoal dust. The warmed ingot-mould is placed in a convenient position, with a piece of sheet tin underneath; it may happen when least expected that the coal splits, or, that, in shaking in place of stirring, a little gold flies or runs over. When the gold has been melted well expose it to a soft flame for one moment longer, and when it shows a nice button, pour it, but not with too great haste.

THE BEST MOULD FOR CASTING.

An open ingot-mould should never be used in casting; the gold cast in it invariably labors under the disadvantage of being impure, or cracked upon the entire surface; such a bar will never have as regular a form as when cast in a closed mould. The goldsmith may himself manufacture such a mould very readily and in a simple manner.

MALLEABILITY OF THE INGOT.

Freshly alloyed gold is best suited to stand further working; its not being easily workable is frequently due to the lack of care exercised in the melting and casting. In spite of all patience in the repetition of the melting and the most painstaking care, however, it will have happened to some of my readers that the gold proved to be brittle. It is to be supposed that an annealing fluid would contribute to its toughness. Most suitable for this is perhaps the ordinary nitric acid, as it cleans at the same time the surface, and perhaps creates a thin film of pure gold. It is perhaps best not to anneal it while too hot. Much is also contributed to the ductility of the gold by hammering it; strike it a few times on all sides, and only then bring it between the rollers. Both 8 and 14-karat gold must be glow-heated very often; but 18-karat is best worked up to finishing without glow-heating it, as it is almost sure to crack in this process. If, however, it will not stand at all melt it again, and when liquid add a small quantity of corrossive sublimate. This has the property of expelling the air, for which 18-karat gold has a great affinity; in other words, it assists it in becoming compact. The expert workman will know by the very sound whether gold is ductile or not. If it gives a clear ring when thrown down it is good; if, however, the sound is dull, count on its being brittle

TO CORRECT CRACKED GOLD.

Should the gold crack only at a few places, the defect may be corrected by welding. Coat it with borax and lay it upon the coal in such a manner that it lies upon it everywhere. Then heat it until it almost melts; it will then be found that the jaggered places have run together again, and will not re-open in the succeeding working processes. This, of course, applies only to 18-karat gold. If, however, it will not become tough in spite of all endeavors, it is best to use the particular piece for 14-karat, and try another alloy. It is a first indispensable condition to use only the finest kind of copper for alloying.

THE USE OF SCRAP GOLD.

The use of scrap gold, when used for 14-karat, sometimes occasions great difficulties. It is best to dispense with the many remeltings and refine it well at once, for which the following method can be highly recommended. The gold to be refined is weighed exactly, and with a corresponding quantity of saltpetre placed into a crucible. Upon this invert a smaller crucible with a hole through its bottom, and then lute the joint well with clay. Place the crucible in the furnace, and at first heat slowly; when the vapor issues quietly from the air-hole the gold is melted; keep it in this condition for one-half hour longer; you may then be sure that the saltpetre has operated well, and has refined the gold. When cold. break the lower crucible carefully, so as not to injure the perforated one, which may be used again at some future time. Then weigh the button, add the wanting quantity, melt together, and cast. It will then be malleable.

MELTING WASTE

In most shops only the entirely clean gold filing dust is melted. Everything else is added to the waste, which is melted together once about every two months, and sent to the assayer for refining. This method is under all circumstances the most convenient, as the jeweler works thus only with good gold and is seldom called upon to refine. In many establishments, even when it is ascertained that a purchased lot of gold is not as pure as it should be, it is thrown into the waste. Before melting heat this waste well in a pan, draw a magnet through the pile and take out all the iron. Then mix it well with potash or fluxing powder, place everything into a good-sized crucible, strew upon the surface a layer of salt, which prevents the boiling over, and place the crucible into the furnace. Since, especially in the melting of waste, the crucible bursts easily, great care is to be exercised in regulating the heat well, and that the charcoals lie always compact during the melting. To prevent the crucible from sinking down to the grate when the coals underneath have been burned away, it is well to place it on the lower half of an old one. When the waste begins to behave more quietly, and emits a whiter, beady vapor, the metal has been melted; either cast at once, or else let the crucible get cold, and melt clean. When doing the latter, and a clean button with rounded edges and smooth, arched surfaces is found, the melting is successfully performed; but, if it is flat and sharp-cornered, it still contains foreign metal. Preserve and add it to the next melting of scrap. It will decidedly not pay to attempt to refine the scrap, as the assayer can do it much cheaper and better.

THE WANING OF THE HONEYMOON.

GROOM—A ring around the moon is the sign of rain.

BRIDE (sweetly)—And a ring around a woman's finger is the sign of—

GROOM (sadly)—Reign —*Racket.*

Repairing an English Lever Escapement.

IN MAKING alterations and repairs to an English lever escapement, says MR. Henry Ganney, a frequent use of the depthing tool is necessary, as many errors are quickly perceived with the escapement in the tool, that are troublesome to discover in the frame. When practicable, alterations of the pallet stone are best confided to a pallet-maker whose appliances for resetting stones and polishing them are more complete than the repairer's, though most repairers away from centers of manufacturers can make mills for cutting corners of pallets by charging a brass or soft metal ferrule with diamond dust or bort. The method of charging is very simple; some diamond dust being mixed with oil is placed on the flat stake of the vise, and the ferrule is placed upon it and hammered; the diamond dust is embedded in the brass, and when mounted on an arbor, with the turns and bow, may be used as a circular file or grinder, against which the pallet may be held and cut.

The cutting of pallets may often be avoided by shifting the positions of the jewels, which, being fixed with shellac or cement, will, if warmed, allow the pallets to be moved. Many repairers use spirits of wine for cleaning; this dissolves shellac and most cements, and escapements should not be left in it any time, or the jewels will be loosened.

Alterations of wheels and pallet depths generally involve alteration of the angling or position of the pallets on the lever, to secure equality in the run and action on each pallet as moved by the roller. Unpinning may not be necessary, but the lever being held edgeways in a suitable recess, a brass punch applied with a light hammer to the pallets will make great alterations of the angles with little trouble or disturbance of existing conditions. Where the holes are jeweled, a favorite plan of altering depths of escapement is the making of an eccentric staff to the pallets. The staff and bottom pivot are made in the usual way, that is, turned and polished perfectly true; but before making the top pivot, the center on which it has been turned is filed away, and a new point for it to run on is made, so that when in the turns the pallet arbor runs out of tooth or eccentric, the top pivot being now turned and polished in the usual manner. With this staff in the pallets we can make alterations of the escapement deeper or shallower, or one deep and the other shallow, as its position in the pallets may be altered to vary both roller and lever depths, and wheel and pallet depth, as may be desired. The correct depth of a wheel and pallet is ascertained by placing them in a depthing tool and observing three of the wheel teeth pass freely inside the pallets, and holding the lever tightly with the fingers, see that the wheel tooth falls on the inside locking plane as shallow as possible, without missing or falling on the second impulse plane, and that three teeth have a little shake between the corners of the pallet it has just left and the one it has fallen on. Rather more shake will be required on the outside of the pallets, as these have to move between four teeth, and without fair shake between the four teeth and the outside corner of the pallets, the pallet though it may escape is liable to dig into the back of the teeth of the ordinary ratchet escape-wheel. The club tooth-wheel having substance which allows of the back being hollowed, the inside and outside shake may be equal, and in this respect it is preferable as well for strength and the greater equality of the impulse and locking frictions as the whole of the actions are more concentric.

If wheel and pallets are the right size, by making the pallet deeper increases the freedom on the inside of the pallets, but decreases it on the outside, and the lever escapement, unlike most others, is most effective in being made as shallow and light on its actions as consistent with safety.

The replacing of any part of the lever escapement, if lost, should not involve much difficulty to the repairer, the mounting of the wheel being much the same as every other wheel, except in new work, when it is usual to rub the brass rivet down with a pointed center, to secure the wheel to the collet; but riveting will be most reliable for the repairer if unpracticed, and if unskilled in polishing with grain tin polisher and red stuff, a sufficient polish may be given by rubbing the wheel on the burnishing glass, which is made by rubbing two pieces of glass together with fine emery and water, and keeping them, and whatever is polished on them, perfectly polished. These glasses serve the same purpose with brass that the deal burnishing board, charged with emery does with steel and steel burnishers, and a clean flat gray is, even in new work, always preferred to unflat high-polishing, which, to be done well, requires much application and practice. This latter method is going out of fashion in good work of all nationalities. A clean piece of wash leather must be used to hold the wheel down on the glass, and a light circular rub is given; the glass must be carefully rubbed clean with the leather. Repairers never seem to understand the importance of cleanliness in polishing. Rouge, which in other hands polishes beautifully, is with them no better than oil-stone dust. Burnishing with a clean brush is no use in polishing. Nothing but soft bread, kneaded in the palm of the hand to a dirty paste, and the work to be cleaned imbedded in it, will remove dirt properly for polishing purposes; or if a pivot or arbor, polishing in the turns for burnishing, a clean card scraped on the edge with the knife and applied to the polished surface, will clean and dry sufficient for burnishing, or for observing what progress has been made in burnishing.

To Enhance the Appearance of Brass.

THE process for imparting to brass a handsome gold yellow color with either high luster or mat, is principally based on the use of various pickles. The articles to be treated must previously be exposed to a red glow heat, and then carefully cleaned, which is best done in feebly hydrochloric water (about 1 part of acid to 10 parts of water.) Next follows the first pickling in a wooden lead-lined receptacle, which contains only a feebly effective pickle of nitric acid. When all spots have disappeared and the article is of uniform color, it is rinsed in cold water and preserved in dry sawdust for the next operation. If a gold yellow mat is desired, the piece is placed with the adhering sawdust in a second stronger bath (1 part water to 2 parts nitric acid,) in which it is left a few minutes, until the first effervescing fluid has calmed down and the froth upon the pieces has subsided. When the piece has assumed a uniform mat color, it is immersed in concentrated hydrochloric acid and at once rinsed in clear fresh water which must be renewed frequently. In order to be very certain, it may be dipped in warm alkaline lye. After the acid has thoroughly been neutralized, a boiling solution of 1 part tartaric acid in 30 parts water is poured over the article. It has by this time assumed a very handsome gold yellow color, and is dried in sawdust contained in a heated pan. The adhering sawdust is easily shaken off by placing the article in a bag, and it is then protected against tarnishing by being covered with a gold-colored shellac varnish.

A DOCUMENT.—Somebody communicates to the *Genevois* the following document, emanating from the Genevoise government of the last century, which will certainly interest our readers working in factories. "Publication concerning horology, approved by both the large and small council, September 15, 1750, and May 3, 1751: The unde signed, having learned that some persons are teaching to women or girls, not of this city, the manufacture of various pieces of watches—such as barrels, hands, pillars, fusee chains, balance springs, keys, polishing fusees, dials, the art of trimming wheels and gilding watches, etc., all of which might eventually be to the great prejudice to the manufactures of this city; therefore, we very urgently inhibit and forbid to those parties, whoever they are, in the future to teach to none other than women and girls of this city, any of said branches of the trade, under the pain of 200 florins fine, besides the destruction, which fine will be increased in case of the repetition of the offense. All women and girls are likewise forbidden from making above said articles under the pain of 50 thalers fine, and the confiscation of their work and tools."



A Complete History of Watch and Clock Making in America.*

[By Chas. S. Crossman.]

Number Forty-eight.

Continued from page 38, October, 1890.

AUGUSTINE NEISER.

In Schaff & Westcott's History, page 2,334, Vol. 3, we find the following: "Among the early clockmaker's advertisements and cards mention is made of Augustine Neiser, who was born in Schlen, Moravia, in 1717, and came to Georgia in February, 1736, and to Pennsylvania, 1739. He settled in Georgetown, where he carried on clockmaking." He died in 1780, and was buried in Georgetown. None of the clocks have any date on them, but he probably made clocks from the time of his settling in Georgetown until nearly the time of his death.

EDWARD DUFFIELD.

Edward Duffield was one of the earliest clockmakers in Philadelphia. He was born in Philadelphia County in 1720, and began business when he attained his majority in 1741, at the corner of Second and Arch streets.

He became a great friend of Dr. Benjamin Franklin, and made many instruments for him. He later took up the manufacture of philosophic instruments as part of his business.

In Watson's Annals, Vol. I., page 544, we find the following: "Duffield was a respectable inhabitant of Philadelphia, well read, and who excelled as a clockmaker. He became a particular friend of Dr. Franklin, and was executor of his estate. Duffield made the first medals ever executed in the province of Pennsylvania in honor of the victory over the Indians at Kittaning, in 1756. He made a double dial clock which he put out from his second story window, and it became one of the standards of the town."

He succeeded Peter Strech in the care of the State house clock in 1762, and was in turn succeeded by David Rittenhouse in 1775. He moved his business to Lower Dublin, Philadelphia County, in the latter part of his life, and his street-clock was used in the village academy there as standard time, sun-dials on the houses having previous to that time served that purpose. Mr. Duffield continued to make a few clocks up to the time of his death, which occurred in 1801.

JACOB AND JOHN HEILIG.

The first named was of Pennsylvania Dutch parentage, and went to the city of Philadelphia about 1770 from Montgomery County, Pa., where he had obtained some knowledge of clockmaking from an old clockmaker by the name of Jacob Hagey, who made a few clocks there. Previous to coming to Germantown Jacob was in various locations. We find him in Heft's Tavern, in Market street, also in Dewey's Lane. He made the usual style of high case clocks, except that he embellished the dials with verses of his own composition, as he was a devout Christian, and wished his clocks to bear witness to the fact. One now owned by a Mr. Wetherell, of Philadelphia, bears the following stanza in German:

"Ich danke dir mein Gott,
Für gut und bäsen tagen,
So oft die Stunden schlaght,
Ist ein ueberwanden."

This clock bears the date 1786, and is the usual style of hall clock, with calendar attachment. He remained in Philadelphia until 1824 when he moved to Germantown, where he was succeeded by his nephew, John Heilig. He spent the remainder of his life in Germantown, and died there in 1830.

John Heilig removed the business to Philadelphia, locating at the corner of 9th and Vine streets, which is said to be historic ground, from the fact that the first steam engine ever built in Philadelphia was made on that spot. John Heilig did not make a great many clocks, as he subsequently went into the confectionery business.

JOHN WOOD

is another of the early horological pioneers of Philadelphia, as he had a shop at the southeast corner of Front and Chestnut streets as early as 1775. The locality was known as Peter Strech's corner, and was probably occupied by him previous to the Revolution. Mr. Wood's name does not appear in the directory after 1793, so it is probable that he died or gave up business about that time.

SEBASTIAN AND HENRY VOIGHT

were natives of Philadelphia, and commenced making clocks in that city about 1775 and continued until 1800, although part of the time Henry was not actually engaged at the work, as he was for some years director of the United States Mint at Philadelphia. Their clocks were of the usual style. Thomas Voight was a son of Henry, and commenced making clocks on his own account about 1811, continuing in a very moderate way until 1835.

EPHRAIM AND BENJAMIN CLARK, SUCCEEDED BY BENJAMIN AND ELLIS CLARK.

Ephraim Clark was among the horological pioneers of Philadelphia, commencing the making of high case clocks at Nos. 1 & 3 South Front street in 1785, soon after his arrival from England. He soon after took his son Benjamin into partnership, and they were a successful firm of clockmakers. They changed their location several times until 1806, when Charles, a son of Benjamin, was admitted, and later Jesse. These latter two went out of the firm in 1811, and Ellis, another son, was admitted, Ephraim Clark reiring, the new firm being styled Benjamin and Ellis Clark. They were now located at the southeast corner of Front and Market streets. In addition to their clockmaking business they imported on an extensive scale castings and forgings for high case clocks, and sold large quantities of them to the Pennsylvania clockmakers. At one time they were much the largest importers of this material in the United States. As the demand for high case clocks became less the firm's business declined, until about 1845 when it was closed up.

JOSEPH H. JACKSON.

Joseph H. Jackson came to America from Wolverhampton, Staffordshire, England, in 1801, and proceeded to Germantown, where he worked for a few months as journeyman for Jacob Heilig. At that time he was twenty-one years of age. Leaving the employ of Mr. Heilig he established himself in Flowertown, a part of Germantown, and there made clocks until 1810 when he married and moved to Chestnut Hill, another suburb of Philadelphia. He remained in that location until March, 1817. The Connecticut clocks drove him out of clockmaking as an occupation, and he bought a small farm in Clay Creek, Delaware, and settled himself there, where he spent the remainder of his life farming and repairing clocks.

ISAIAH LUKENS AND SAXTON & LUKENS.

Reference has already been made to Mr. Lukens as a clockmaker, in connection with the clock built for the State house. But little is known of Mr. Lukens personally, as he was not a family man and lived very much within himself. His first shop was in Third street, Philadelphia, where he commenced about 1810. He afterwards moved to Eighth street, and took a young man by the name of Saxton into his employ and afterwards into partnership, the firm becoming Saxton & Lukens.

The State house clock was probably the largest clock that he built, as most of his clocks were of the large stationary style for banks and public halls. Most of them were cased in the half-tower style of cases, and had long wooden pendulums. When the clock business did not furnish a sufficient income Mr. Lukens filled in his spare time by manufacturing air-guns, but he always called himself a clockmaker rather than a gunmaker. The business was discontinued after Mr. Luken's death in 1845.

(*To be Continued.*)

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FOREIGN GOSSIP.

Wonders of Littleness.—Both Pliny and Elian relate that Myrmecidos wrought out of ivory a chariot, with four wheels and four horses, and a ship, with all its tackling, both in so small a compass that a bee could hide in them. Nor should we doubt this, when we find it recorded in English history, on less questionable authority, that in the twentieth year of Queen Elizabeth's reign, a blacksmith of London, of the name of Mark Scaliot, made a lock of iron, steel and brass, of eleven pieces, and a pipe key, all of which weighed only one grain. Scaliot also made a chain of gold, of forty-three links, which he fastened to the lock and key, and put it around the neck of a flea which drew the whole with perfect ease. The chain, key, lock and flea altogether weighed but one grain and a-half.

The Royal British Plate.—The Royal British plate, probably the finest in the world, is usually kept in two strong rooms at Windsor, and is valued at $10,000,000. The gold service purchased by George IV is sufficient for 130 persons, and the silver wine cooler, which he bought about the same time, is capacious enough to hold two men, who could sit in it comfortably. It is inclosed in plate glass, and the splendid chasing took two years. There are some quaint old pieces in the royal collection, which belonged to Queen Elizabeth; some were taken from the Spanish Armada, and others were brought from India, China and Burmah. There is one cup which belonged to Charles XII., of Sweden.

A World-Moving Word.—The scientist who, according to irrefutable evidence, first made use of the expression "electricity" was an English doctor by the name of William Gilbert, who lived in the sixteenth century. In 1600 he published in London a work by the title, "De magnate, magnetisque corporibus et de magno magnete telluro Physiologia nova." In this work, which already contained the main principle of the earth's magnetism, occurs the following sentence: "Vim illam electricam nobis placet appellare quæ ab humore provenit." William Gilbert, born at Colchester, in 1540, died November 13, 1603. He was confidential physician to Queen Elizabeth, and afterwards to King Jacob I., and a very intimate friend of Lord Bacon. His work, "De Magnate," contains a number of interesting experiments. It met with less public reception and fame in England than in foreign countries; since 1628 five editions have appeared in Germany, three in France, and only two in England.

Old Astronomical Clock Repaired.—The celebrated astronomical clock in St. Mary's Church, at Lübeck, resembling the clock at Strassburg, has recently been repaired and renovated—a work requiring two full years. For the manufacture of the extremely complicated train, new machinery of various kinds was necessary. The visitor beholds in the clock first the calendar dial, nearly four yards in diameter, and, on stepping back, he sees the astronomical work—the starred sky, as seen from Lübeck; the sun and moon, as well as Venus and Mercury, make their revolutions in time, exactly in accordance with that really existing—Mercury in 88 days, Venus in 237 days. In the old clock the time of these revolutions was the same as that of the earth—once in 365 days. The clock also operates the large clock above the altar, which strikes the quarters; a carillon plays a hymn every hour. At noon every day the so-called "Apostles" (the emperor with the seven electors), make their appearance, and at the same time Christ is worshipped by several angels. Our forefathers were fond of constructing such complicated time-pieces.

Interesting Find.—The warden of the Louvre recently presented to that institution a historical sword of the fifteenth century. The blade is that of the style called "beef tongue," but longer than such generally are. The ivory hilt is surrounded by a gilt copper band, containing a Latin inscription. The blade is very handsomely gilt, and the sheath is embellished with exquisite taste. From engraved initials in it, it appears to have been made by Hercules de Pesaro, also the maker of the celebrated sword of Cæsar Borgia. The coat-of-arms of Gonzagne is engraved on the hilt. François de Gonzagne commanded the confederated Italian army, beaten by Charles VIII., at Fornoue, July 6, 1495. It was very possible that the sword was delivered to the royal victor and deposited in the state treasury before it was taken to the Château de la Touraine, where the warden found it.

French Exposition.—The French exposition, held at Earl's Court, London, appears to be a financial success, and many first-class French houses are represented. *Classic and fancy jewelry:* Sandoz, Dècle, Peconnet, Ucciani, Ducreux, Brunet, Lorier, Baudouin, Dreux, Casiez, Pouplier, Rambour, etc. *Jewelry generally:* Sandoz, Baudouin, Lahaye, Vaquer, Peconnet, Galli et Chambin, etc. *Artistic enamels:* Charles-Jean Gossart, and other highly renowned houses. *Silver jewelry:* Bieli, Vaumarin, Heurgon, Recault, Bourette, Ruret, Lucy et Wathiau, Silvestre, Rousin, etc. *Horology:* Sandoz, Margaine, Jaillon, Recault, etc.

Another Astronomical Clock.—We receive the information from Mulhame that a rare work of the horological art is being exhibited there at the exchange, to wit, an astronomical clock, similar to that of Strassburg. Not taking into account the many figures and other mechanisms, the clock is of an imposing. harmonious appearance, being built of black walnut, in the handsome and pleasing style of the Renaissance, and has a value of 50,000 marks. The clock shows the seconds, minutes, quarter-hours, hours, days, weeks, months and years, taking note of the bisextile days and feast days, until the last stroke of the year 9,999, when it is to be hoped the thing will be altered to suit the exigencies of the year A. D. 10,000. Different automatic figures come into operation with the change of the seasons, and an excellent orchestrian makes music to move more quickly the leaden feet of the passing year. The builder of the clock is a certain Mr. August Noll, born at Bierlinger, who has spent five years in the construction.

Fancy Diamonds.—The De Beers Consolidated Mining Company have quite a collection of fancy colored diamonds, being the result of several years' selection. There are purple, brown, green, deep red, orange and lemon yellow diamonds. The green diamonds have only just a shade of green in them, and are not to be compared to the six or seven green diamonds which were set in a cross, and used to be (and are perhaps now) exhibited in the British Museum.

The Czar Clock.—At the time of the Czar of Russia's miraculous escape from the wrecked train, it was resolved, as duly announced by the Circular, to commemorate the happy deliverance of that august personage by the construction of a clock. This clock has just been completed at Ryshew (Charkow). It is composed of solid silver, and weighs 600 pounds. It has been placed on the Uspenhi Cathedral in Charkow, and upon the 17th of October of each year (the anniversary of the accident) the Czar clock, by a peal of bells, will recall to the memory of the inhabitants the miraculous escape of their emperor.

Law Rigidly Enforced.—As is known, the English parliament passed a Merchandise Marks Act some years ago, for the protection of English home manufactures under which act, a prominent watchmaker, John Hyland, of Cheapside, was prosecuted recently. He exhibited for sale in his shop window a cylinder watch, the works of which were all of foreign make. It was described on the sale-ticket as a ¾-plate lever, London finished, and having the Birmingham hall mark. A leading member of the Society of Watchmakers, and, naturally an expert, saw the deception attempted to be practiced, entered the shop, and bought the watch, with the result that the offending tradesmen has been fined at the Mansion House, as a wholesome warning to others. The fine was £10 and costs, the whole amounting to $75.



ENGRAVERS' BORDER WAX.—Beeswax one part; pitch, two parts; tallow, one part; mix.

TO TRANSFER PICTURES.—If you desire to transfer pictures from paper to wood, for re-engraving, soak the print in a saturated solution of alcohol and white caustic potash to soften the ink; then transfer to the block under roller pressure.

METAL LETTERS ON PLATE GLASS.—It is often necessary to attach glass or metal letters to plate glass. Use the following binder: Copal varnish, 15 parts; drying oil, 5 parts; turpentine, 3 parts; oil of turpentine, 2 parts; liquified glue, 5 parts. Melt in a water bath and add 10 parts slaked lime.

SHAPE OF PIVOTS.—Pivots should be cylindrical, well tempered, with a shoulder or bearing at right angles, but rounded at the end; the same may be said of the pivot poles. The material entering into their composition must not be easily oxidized by the action of oil, and it is advantageous to have them somewhat olive-shaped inside, with ends lemon-shaped and extending beyond the air sinks. They should bring the oil to the pivots, and for this the sharp-angled pivot is the best.

TO CLEANSE A BRUSH.—A watchmaker's brush is in constant requisition, still, it is seldom kept in proper order. A soft brush for rough work is useless, a hard one for fine work is ruinous, and a dirty brush for any kind of work is a nuisance. Some brushes are cleaned with dry bread; some by laying a piece of tissue or other paper across the wide open jaws of the bench vise, the sharp corners formed by the jaws taking off on the paper a little of the dirt. These methods are imperfect. A good way to clean a brush is with soap and water, warm water being preferable. Wet two brushes, soap them, and then rub them together in plenty of water, till perfectly clean. An objection to this method is the delay of drying. Apropos of brushes: much injury is done to the appearance of the movement by injudicious brushing, and the watch grows prematurely old in appearance by such treatment.

SHAPE OF THE JEWEL HOLE.—What shape is to be given to the jewel hole when the ends of the pivots turn against cap jewels, is an interesting question. The course usually pursued is to make them concave inside and convex outside. The concave brings the parts in closer connection and makes the oil adhere better. The convex, on the other hand, derives some advantage from the position of the flat counter pivot over it. What shall be the distance between the cap jewel and the convex part, is another mooted question. When they are placed just above, the ends of the pivots turn in the hole and the oil is more likely to spread, and if the cap jewel is too far away, the oil may run off altogether. The distance should be such that the end of the pivot should be outside of the hole when the arbor is working in the hole jewel only. The rule followed in the depth of the hole is usually to make it as deep as it is wide; deeper holes would only increase the effect of the oil. The hole should also be rounded off inside and at the corners.

LUBRICATION.—Concerning the relative importance and effect of the quantity of oil used for lubricating a watch, it may be stated in a general way that neither too much nor too little should be given. If there is too much oil the excess will "get the better," as it were, of the capillarity; in other words, it will run off and carry the necessary lubricant with it, and there will be a certain amount of wear by the friction. The superabundant oil will spread over other parts only to the injury of, and prove as an obstacle to, the time-keeping qualities of the watch. The great aim of the watchmaker should be to bring all the different parts of the watch into a harmonious whole, but at the same time not to lose sight of auxillary matters. It very often happens that the best watch does not go as it might, owing entirely to the action of the oil, and the watchmaker should always be on the lookout for a good oil that will not rust, run, or leave its place.

GREEN BRONZE FOR BRASS.—Mix eighty parts of strong vinegar, one of mineral green, one of red umber, one of sal ammoniac, one of gum arabic, and one of green vitriol, and add four of Avignon berries (to be had in every dye store). Boil the mixture, and strain when cold. The articles to be bronzed should be cleansed with weak aqua fortis, then rinsed and the fluid applied with a brush. Should the color not be dark enough, heat the article until it cannot be held in the hand, and then give a coat of spirits of wine mixed with a little lampblack. Finally apply a coat of spirit varnish,

GRAVERS.—Gravers made by different makers will be found to be of different lengths, and often in those of the same make will be found a like variation. To overcome any difficulty this circumstance may produce, graver handles of different lengths should be procured. The hands of no two persons, any more than their faces, will be found to correspond exactly; and so no rule as to size of handle, and length of blade of graver, that is the most comfortable to hold and easier to use can be laid down The party must "fix" the tool to fit the hand. It will be found upon inquiry, that, as with most things, habit has a great deal to do with the matter. The length of tools and the form given to them in setting up, will be found to vary perceptibly among engravers, no two men "fixing" them, in either particular, exactly alike.

ARGENTINE.—The silvering fluid, called argentine, is composed of 10 parts nitrate of silver, dissolved in 200 parts water; then add 12 parts of sal ammoniac, 20 parts hyposulphate of potash, and 20 to 25 parts precipitated chalk.

TO PROTECT METAL WARES.—Polished articles of iron, steel, bronze, or brass, are best protected against rust or dimming by polishing them with joiners' polish and linseed oil, in the same manner as joiner's polish wood. This procedure is adapted for all manner of highly polished metal wares, and especially for piano strings. The knack is easily learned. If a little saffron is added for brass, it will receive a gold-like appearance. This must not be mistaken for the common way of "varnishing," by means of a brush. The inequality of such a coating is always disagreeable to the eye while the other manner cannot be recognized, even by expert eyes.

TO RESTORE GOLD CHAINS.—Several methods are employed, according to the color desired and goodness of the alloy. In all cases, a preliminary cleaning with aqua fortis and subsequent rinsing in cold water will be necessary. For *yellow* gold, take six parts saltpeter, two copperas, one white vitriol, and one alum. Powder finely, mix, and add water prior to application. For *green* gold, eleven and two-tenths sal-ammoniac, eleven and four-tenths Roman silver, eleven and two-tenths verdigris, well mixed, and moistened with water for use. For *red* gold, sal-ammoniac, blue vitriol, alum, and borax, equal parts. Powder, mix, and moisten with water. For general work, take common salt one part, alum one part, saltpeter two parts, the whole well powdered and mixed. To use these place them in a plumbago (not metal) crucible, with a small quantity of water, and heat until the composition begins to boil. Having suspended the work by a horse-hair, insert in the crucible, and allow it to remain there, moving it about for seven minutes. Withdraw and rinse well in a vessel of boiling water. The color will now be dark, almost black; again dip and rinse, and repeat this operation until the work acquires the desired rich tint. Finish with a scratch-brush or burnisher, and lay in boxwood sawdust.

BRASS.—A good method for drawing the temper from brass is to heat it to a red color, and then immerse it in water. It can be hardened by hammering.

Optical Talk.

TWO things are necessary that an object should be visible. It must be large enough, and send light enough; therefore increase of distance may render an object invisible, either through diminuition of its size, or through quantity of light it sends to the eye, or both. A telescope, opera, field, or marine glass, the object of which are to render distant objects visible or clearer, must be magnifying as well as illuminating, or light gathering instruments. There are two classes of these instruments—those depending on reflection or the formation of the image on a mirror in a tube, and then enlarging and viewing it with a convex lens, as in the Newtonian, Gregorian and Cassegrianian reflecting telescopes, or those acting by refraction, or bending of the rays proceeding from the object looked at, which is the one that interests us most, as the instruments we are considering belong to this class. The refractive telescope, which is the one in most general use, was invented in the thirteenth century. The simplest form consists of a convex lens of long focal distance, or, in other words, a weak convex fixed at one end of a tube which is nearest the object looked at, and called the objective or object lens. Convexes, as you know, bring rays to a focus, or form an image which is inverted in the telescope; the object lens forms an image, and this image is magnified by a second convex of stronger power, which is in the other end of the tube next to the eye, and is called the eye-piece. For distances, these lenses are placed at a distance from each other equal to the sum of their focal distances or strength; for instance, if the object lens is a number eight convex, it will bring rays to a focus, or form an image, eight inches from it, and the eye-piece number two convex should be ten inches apart. To adjust it for different distances, the eye-piece is fixed in a tube which slides in or out of that containing the object lens. The object seen through a telescope of this kind is inverted. This form is known as a simple astronomical telescope. But an erect image may be obtained by adding two other convex lenses, of the same kind and strength, between the eye-piece and the eye, which may be used a terrestial telescope or spy-glass.

If a concave eye-piece be used instead of the convex, we have the telescope invented by Galileo and called the Galilean telescope, which exhibits objects in an erect position and with great clearness. The opera, field and marine glasses are constructed optically upon this principle. The lenses in these instruments and the opera-glass are placed at a distance from each other equal to the difference in their focal length or strength; for instance, if the object glass, which is convex, will bring rays to a focus and form an image 8 inches from its centre and the concave eye-piece has a focal length of 2 inches, their distance from either would be equal to 8 in.—2 in.=6 in., hence they are much shorter than telescopes or spy-glasses where both object-glass and eye-piece are convex.

To find the magnifying power of an opera-glass or telescope, divide the number in inches of the object-glass by the number in inches of the eye-piece; for instance, if the object glass be of 6-inch focus and the eye-piece of 2-inch focus, then the strength would be equal to the quotient of 6 in.÷2 in.=3. The strength of a glass of this kind would be three times. If an object were looked at 300 feet away it would appear as if at 100 feet.

The salesman will often be asked, "How far can I see?" with a certain instrument, which is very easily answered if he knows the power of it, and how far the unassisted eye can see it. It has been proven that a person with normal vision can see an object, if the condition of the atmosphere is good, at a distance equal to 5,000 times its diameter, e. g.—an object 1 inch in diameter can be seen 5,000 times 1 inch or 5,000 inches, or 417⅔ feet; then, with an opera glass, with a power of three diameters, we could see it equally well 3 times as far, or 1,253 feet.

You will hear of opera, field and marine glasses having 6 lenses or 12 lenses, which needs an explanation. When light passes through a prism it is resolved into colored rays, and, as a convex object-glass is theoretically composed of a number of prisms with their bases or thick portions turned in and a concave with bases out, a similar effect is produced, though not so readily observed, but enough to interfere with the clearness of the object, causing it to appear tinted at the edges with colors, which is called chromatic aberration. Rays of light passing nearest the center of a convex lens will come to a focus further from the lens than those passing nearer its edge, so that the image will be very distinct at its centre but less so on its edges; hence an object cannot be seen with equal distinctness in every part at the same time, owing to this spherical aberration, as it is called. These can be obviated by combining a concave and a convex of different density and refractive power. The convex usually of crown and the concave of flint glass, cemented together by means of Canada balsam, is known as achromatic or colorless lens.

A six lenses opera glass has three lenses in each tube. Each object-glass is composed of two lenses—viz.: one concave and one convex of flint and crown glass respectively, and one concave eye-piece, making six lenses in both tubes. When greater magnifying power is desired, combined with achromatism, each eye-piece and each object-glass must be constructed of three lenses, making twelve lenses in all.

By the field of view is meant the amount seen at one time.

The distance between the eye-pieces should be equal to the pupillar distance of the observer or the glass will not be satisfactory. To get the proper focus of an opera-glass, hold it to the eyes, turn the screw in centre in middle of barrels back and forth until the object looked at is clear and distinct

The lenses should be kept clean, and not touched with the fingers or gloves. A chamois skin, dampened with alcohol, is the best to clean the lenses with.

Field and marine glasses are constructed optically upon the same principle as the opera-glass, but more power is required, and, in order to produce this in an instrument constructed upon this principle, the object lens must be of greater focal distance or weaker and the eye-piece stronger, and the object-glass must be increased in diameter to increase the illumination with the increase in power. A field or marine-glass for night use should have large object lenses. These are often termed night glasses.

To determine the power of an opera, field or marine glass, get a good focus for some object, such as a gas jet, or distant test type is preferable, then look through one side with one eye at the same time with the unassisted eye. You will then see how much larger the one seen through the glass is than that with the naked eye, which gives you an idea of its power. The difference in power of two instruments may be found by looking through one tube of each at the same object.

Field and marine glasses have powers of from 3 to 12 diameters.

Good definition is the showing of all the outlines of an object with perfect distinctness. If the distances between the eye-pieces is wider or narrower than the distance between the pupils of the observer, there will appear to be two circles of light when an object is looked at.

The more powerful the instrument the less field it possesses, or the less scenery can be seen at the same time.

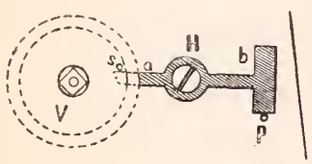
Bi-noculars are two spy glasses or telescopes combined, one for each eye, and constructed optically upon the same principles as the terrestial telescope or spy glass; e. g. with a convex object lens and a convex eye-piece and convexes between them to give an erect image. Besides their great power, they have the advantage of bringing both eyes into use, thereby increasing the amount of scenery or field of vision. A bi-nocular is equal to a spy glass having a greater power. The best have the pupillary adjustment.

When a lens for the correction of some error of refraction in the eye of the observer is added to the opera, field, marine-glass or telescope, it is said to be adjusted.—*From* OPTICAL TALK, *by F. Ogden Stout. Pub. by Spencer Optical Mfg. Co.*

Timing a Regulator Quickly.

A REGULATOR with striking work, says Jos. Buschmann in *Deutsche Uhrmacher Zeitung*, is in a few hours timed by listening to the short loud tone produced by the dropping of the lifting piece from the unlocking pins, which occurs every half hour or hour. In going-works, however, this tone does not occur, and it is difficult, therefore, to ascertain the true rate within a few hours after repairing such a regulator, because a difference of plus or minus 5 seconds can frequently not be nicely distinguished on the rough and frequently badly divided dial. But it will be found that these going-work regulators are most in use; in schools, post-offices, business offices, etc., they are almost exclusively found, first because a correctly going timepiece is highly necessary there, second, because there is frequently much noise that the striking cannot be heard, and third, the striking would occasionally have a disturbing effect, and beside, this useless appendage would increase its price unnecessarily. It is therefore necessary to have a means by which these going-works can be timed as quickly and easily as those with striking-work. For this purpose I manufactured the accompanying simple device, which required little labor and has in my hands rendered excellent services, so that I believe to do a favor to my fellow-watchmakers if I acquaint them with it.

The sketch represents a part of the front plate of a going-work regulator, the right edge of which only is indicated; *v* is the canon pinion, *H* a small hammer, which by means of a stop-screw to the right of the canon pinion is secured upon the plate, and can be readily revolved.



The pin *p*, drilled into the plate serves for the locking of the hammer, and the pin *s*, located in the canon pinion for its unlocking When the hammer *h* is by its arm *a*, unlocked by the pin *s*, and then falls, its weighted arm *b* creates the noise used for the rapid timing of the regulator, by the striking upon the pin *p*.

For the benefit of those who are still unacquainted with this method of timing which was at a former time described in this paper, I am free to repeat it. Turn the minute hand first very slowly once around the dial and notice which minute the drop of the unlocking of the hammer *H* takes place. Then place the hands at one minute before the time at which the drop of the hammer must take place, set the clock going and then count the seconds oscillations of the second regulator, listening at the same time when the drop of the hammer becomes audible. The second when this sound is heard, is noted, and the clock under process of timing is left to go for one hour, during which time, as a matter of course, the exact difference of time between the going-work regulator and the seconds clock is also noted, in the case that the difference within one hour shall amount to a relative minute. After the course of one hour, this procedure is repeated, that is, the operator places himself at the right time before the two clocks, count the oscillations of the seconds pendulum and listen to the noise of the dropping hammer. If this occurs, for instance, 7 seconds earlier than the first time, it is easily calculated that it would make a difference per day of $+2\frac{3}{4}$ minutes, and the pendulum-bob is lowered correspondingly. With a little practice, a clock may in this manner be timed exactly within a few hours.

The timing being finished, take off the dial, unscrew the hammer again and use it for the same purpose in other clocks. The pins in the canon pinion and plate, as they are in no manner injurious, may remain in the clock, to serve the same purpose in some future repair. The very trifling trouble of inserting the two pins and to cut the thread for the stop-screw in the plate, is fully remunerated by the exact rate of the clock. I consider this little hammer to be one of my most practical auxillaries, without the use of which I would not like to deliver a clock which has to be timed with dispatch and precision.

Thank You, Gentlemen.

Pittsburgh, Pa., Aug 8, 1890.
The entire publication is full of interest to me; you have my best wishes for its continued success. W. W. Wattles.

Columbus, Ga., July 23, 1890.
We find great interest in all your departments. Even all our employees read your publication throughout.
Wittich & Kinsel.

Shelbyville, Ind., July 23, 1890.
I have made several sales from illustrations in The Circular. I have taken The Circular for over twenty years and expect to continue until the end of time F. C. Sheldon.

Charleston, S. C. July 29, 1890.
I have taken your Circular for many years and still look upon it as a valuable trade journal. James Allen.

Philadelphia, Pa., July 29, 1890.
We have always considered The Jewelers' Circular a very good trade journal, the best we have seen.
H. P. Van Aken.

Crestline, Ohio, July 30, 1890.
In my estimation you publish the best trade journal I can find.
C. A. Miller.

Lexington, Mo., July 15. 1890.
We have subscribed for The Circular for a number of years, and are very much pleased with the whole work. We consider The Circular the best trade paper now published.
Grimes & Venable.

Birmingham, Ala., July 24, 1890.
The Circular is good enough for anybody, from the blockhead to the LL.D, and has instruction enough to improve all.
Harry Mercer.

Paterson, N. J. July 25, 1890.
I have been a subscriber to The Jewelers' Circular for over twenty years and would regret to give it up.
Louis A. Piaget.

Offerman, Ga., September 11, 1890.
The Circular is the best, and I take both home and foreign papers. J. J. Gibbs.

Macon, Ga., September 11, 1890.
I have no intention of permitting my subscription to run out.
Jos. E. Wells.

Birkenhead, England, Sept. 20, 1890.
I take the opportunity of letting you know that I like the Circular very much indeed, and although it runs me a dollar a year more than your more fortunate American readers, I find it simply impossible to "let her go." I shall continue a subscriber as long as I am in the "biz;" when you hear of me withdrawing, you will know that I have put the shutters up for good.
Chas. McKenzie.

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Mechanical Ocular Defects.

Their Nature, Cause, Correction and Relations to Functional Nervous Diseases.

Edited by C. A. Bucklin, A. M., M. D., New York.

[The aim of the author is to produce a clear and thoroughly practical course of instruction on the subject of "mechanical ocular defects," which is entirely void of useless technicalities and within the easy comprehension of every thinking student without his having had any previous technical or mathematical education.]

TREATMENT OF THE CONVERGENT STRABISMUS OF HYPEROPES.



I FIND a wide difference of opinion between most authorities as to the natural philosophy of convergent squint and its treatment. I am unable to draw the same conclusions from my observations that many others have drawn. I believe that no person can be taught to look cross eyed providing he can see distinctly at all distances with both eyes. Every child who can not see distinctly by using both eyes, but who can see distinctly by looking cross-eyed, will squint, providing he can learn how to *overcome* the annoying difficulties attending the practice of squinting. The difficulty which prevents all non-facultative hyperopes from looking cross-eyed is the annoyance produced by double vision. Acquiring the art consists of learning how to suppress one visual image by an act of the intellect.

Landolt states, page 405: "We may endeavor to increase the effects of an operation by the use of *louchettes*, a kind of opaque spectacles in which for each eye is only a small hole, which makes it impossible to look otherwise than in a certain direction. In thus placing the eye at divergence a few days after the operation, it is possible to obtain a much higher correction." I want no further proof than this statement to thoroughly demonstrate to me that this man, no matter how accomplished in other branches of his specialty, is thoroughly at sea on the nature and philosophy of convergent squint.

If bi-nocular vision is present, louchettes remove every possible obstacle which nature imposes to prevent the practice of squinting. If bi-nocular vision is not present, they are simply useless, as they can not in any way effect the relative position of the eyes. Simply place louchettes on any person having non-facultative hyperopia who has not learned to squint, and observe the effects on the individual's *eyes* by looking behind the opaque spectacles. One eye will fix, the other will *turn in strongly*, and the vision in the fixing eye will improve. Remove the "louchettes," and the eyes will both fix, and the vision will sink to its former acuteness.

The convergent strabismus of hyperopes is due to such a disturbance between *fixation* and *accommodation* that the individual can not see distinctly without looking cross eyed. If the case comes to our observation before the faculty of bi nocular vision is lost, the treatments must be directed toward restoring these disturbed relations, thus making it possible for the individual to see distinctly with both eyes.

We frequently meet very young children whose strabismus is still only in its commencement; the practice has not yet passed into a state of permanent habit. Hyperopic infants during an attack of diphtheria, or other acute infectious diseases, develope slight paresis of their ciliary or ocular muscles which causes their formerly facultative hyperopia to become non-facultative.

I experimented with the sulphate of eserine in these cases as early as 1880 for the purpose of restoring the relations between fixation and accommodation sufficiently to enable the child to see distinctly without squinting, while I resorted to iron and strychina for the purpose of restoring the normal functions of the weakened muscles. Our latest authorities give credit to Ulrich as the originator of this method of treatment, and give the date as 1881. I, however, believe I am entitled to priority. This remedy assists the patient more by the reduction of the size of the pupils than by forcing the accommodation as Ulrich and Landolt state. Very small pupils enable us to see distinctly with both eyes with quite faulty accommodation, when we could not see distinctly with both eyes without small pupils. I am thoroughly convinced that the activity of any muscle under forced contraction is lessened, as in "Thompson's Disease," for example. I have succeeded in making a permanent cure in three cases by the use of the eserine treatment.

On the other hand, the entire suspension of accommodation by the use of sulphate of atropia has been suggested on the ground that if the individual has no accommodation he will derive no benefit from trying to force it by squinting; consequently he will desist from squinting. This is frequently true while the individual is under the full effects of atropia, but I have yet to see a single case derive any benefit from this plan of treatment. The atropia is, however, a very successful means to induce the individual to accept the necessary convex lenses to bring about a cure.

There is frequently a long time during which the squint is more or less periodic; during this time properly selected convex lenses which fully neutralize the hyperopia are sufficient to break up the squint. One of the most amusing experiences is to watch the face of a twelve-year-old child, who, after receiving a full correction by convex glasses, squints when fixing the attention closely upon any object. They will observe the object and squint only to relax the squint with an air of astonishment when they discover that the squint, which formerly produced distinct vision for them, now produces the most indistinct vision. They are only able to see distinctly by giving up the squint, which they will do if the muscles have not become organically shortened. Any other treatment than tenotomy is of but little value after the squint has become permanently developed.

In a general way the squint may be said to be permanent when there are no intervals of time during which the person is free from the defect.

The optician has in convergent squint simply the hyperopia of the young to consider. Hyperopia in the young is the most difficult error of refraction for which one is obliged to select glasses. When bi-nocular vision is lost and the squint is confined to one eye while the other always fixes, the glasses placed before the fixing eye exercises the entire effect produced on the squinting eye. I have always found in these cases that a tenotomy on the fixing eye had more effect than the same operation on the squinting eye.

The reason why the glass before the straight eye exercises the entire effect on the squinting eye is simple. The accommodative increase is required by the seeing eye. The deviating eye turns in for the purpose of producing this increase of accommodation. If by a convex glass before the straight eye the requirements for unusual accommodation are made unnecessary, the deviating eye has no end to accomplish by turning in; consequently it will stay where it belongs unless its muscles has become organically shortened, and thus prevents it from assuming its natural position after the incentive to squint has been removed.

A tenotomy on the fixing eye makes an *inward* movement of the eye necessary in fixing; this makes a corresponding outward movement of the squinting eye positively necessary. The same tenotomy done on the squinting eye does not produce as great an effect. Notwithstanding, the motion of the *squinting* eye has been limited as much as is desirable it will move toward the nose when strong accommodative efforts are required by the fixing eye.

In the above described condition of permanent monocular squint we have usually to select a lens for the fixing eye alone. When the squinting eye also has acute vision it is necessary to select lenses for each eye separately, but usually it is only necessary to fit the straight eye properly and place the same glass before both eyes.

My belief is this: If, in a young hyperope, having periodic strabismus, you can place before the eyes glasses which completely neutralize his hyperopia, and insist on his wearing them, he will very soon learn to relax his accommodation and accept the glasses. A cure of the strabismus is thus established as perfect as can be obtained by any other means. I simply dilate the pupil with cocaine, carefully measure the degree of hyperopia with the ophthalmoscope and prescribe the glasses. I find this method perfectly satisfactory in most *cases* which come under my observation. The key note to the situation is to be sure of the degree of hyperopia. Landolt makes the following statement, in which I can not concur as far as my experience has taught me:

"If we have to deal with a young hyperope affected with a declared and permanent strabismus, the glasses which correct the manifest hyperopia will not suffice to dispel the deviation. One would naturally be lead to think in such a case of excluding even a greater amount of accommodation by correcting the total hyperopia. Such a conclusion would be perfectly correct and logical. But if for such a patient we simply prescribe glasses correcting the entire amount of his hyperopia he will soon return them or put them aside for the simple reason that he is not able to relax his accommodation sufficiently. He will with these glasses see poorly at a distance, and for distinct near vision he will hold objects very near. In the first case our glasses will not have any influence on his strabismus, and in the latter case his strabismus will be made worse by the fact that he is obliged to hold objects near."

In children of twelve and under I do not find the above to correspond with my experience.

First, Glasses can be made which no child can break, consequently this removes the time-worn objection to placing glasses on very young children, I frequently meet young children who are very timid and very ugly. They will not allow an examination of their eyes; the mere sight of the doctor fills the air with the most annoying shrieks. I simply chloroform these children; this stops the noise and the fight. The ciliary muscles are perfectly relaxed; I then place a spring speculum between the lids and control fixation if neceseary with fixation forceps; I then estimate carefully with the ophthalmoscope the entire amount of hyperopia; if it does not exceed $\frac{1}{9}$, I prescribe glasses which entirely correct it. I order the glasses to be worn continually. I come very near getting the best of every ugly cross-eyed child I attempt to treat by this method, which I have practiced for the last ten years, and I have found in after life that they have been cured quite as perfectly as those treated with atropine.

Landolt's statement has sense behind it; when the child has arrived at such an age that he has any say in the matter. It is then perhaps practical to make the accommodation very poor with atropine in order that they may duly appreciate the advantages of convex glasses.

To determine the necessary glasses for hyperopic persons having convergent strabismus which has not become permanent.

Drop three times a day a minute drop of a solution of sulphate of atropia, four grains to the fluid ounce of water into each eye for two days; then select the strongest convex lenses through which distinct distant vision can be obtained, correcting any co-existing astigmatism. Under atropine the hyperopia may be fully corrected up to $\frac{1}{9}$; above this degree it is frequently necessary to give at least for a time a glass one dioptric less than the refractive error. Persons using sulphate of atropia should be cautioned of its poisonous properties if taken internally, and that any decided flush or burning sensation of the face indicates that the person using the drug s too sensitive to it; that its use must be discontinued.

I find that by simply dilating the pupil with cocaine the amount of hyperopia can in a few minutes be easily determined by means of the ophthalmoscope.

It is easy to determine the existence of astigmatism by previous trials with spherical and cylindrical lenses, while usually a simple trial with the astigmatic fan will demonstrate its existence. Having excluded astigmatism and having an emmetropic eye the strongest convex lens through which the fine granular appearance of the epithelium of the retina can be seen represents the amount of hyperopia. A little practice with a few cases, the error of whose refraction is known, soon enables an individual to measure hyperopia correctly.

An exceedingly perfect ophthalmoscope has recently been placed on the market. The instrument is very small and very neat. The mirror is adjustable so that you always look through the lenses squarely. All the convex lenses are contained in one disk, and all the concave lenses are contained in another. Two small milled disks on the handle connect with teeth on the disks carrying the lenses. By means of these small disks either lens disk is easily rotated. This instrument in its most perfect form has been placed on the market by the Spencer Optical Company for $21. It certainly is the most perfect ophthalmoscope ever produced.

We will continue this subject in December CIRCULAR.

Too Much to Forgive.

"I KNOW I am utterly unworthy of you," said the Western youth, who had somehow migrated to Boston; "I am addicted to all of the small vices, and I am anything but well stocked with knowledge." The proud Dorchester maiden looked him straight in his eye, and the expression on her fair face plainly said, "Deus est qui regit omnia."

"Your mind may not be so benighted as you think. Have you acquired involuntary tendencies to utilize tobacco and alcoholic admixtures for personal senuous gratification?"

"If I understand you, I think I have," sorrowfully said the youth.

A look of pity beamed through the fair girl's glasses as she said: "Habit is but voluntary, and you shall be cured. To change our subject, do you think that Ibsen is the paragon of the generation?"

"I don't think I ever heard his music."

The pained expression on the fair brow of the maid was but transitory.

"Ibsen is a writer."

"Oh, yes; he wrote the 'Doll's Nose,' or 'Doll's Hose,' or something like that."

Her soul was in agony as she said, "The 'Doll's House;'" but she forgave him.

"What a pretty vase that is with the flowers in it," exclaimed the reckless youth.

"Vase! vase! to call a jardinière a vase! Oh, Minerva!" frantically exclaimed the wracked maiden. "Out of my sight! Begone! Let not mine eyes fall upon thy benighted self; out of my sight!" And she sank exhausted upon the rugs, while the youth passed out into the night, and his heart grew sick as he viewed the incident in the light of subsequent events.—*American Stationer.*

ANTIQUE bronze effects can be given to iron, lead, brass and any composite metal by dissolving one part of sal ammonia, three parts of cream of tartar, and six parts of common salt, in twelve parts of hot water. This solution is then mixed with eight parts of a solution of nitrate of copper of the specific gravity of 1.160. A uniform film of some vegetable oil is first applied to the article to be bronzed which is then exposed in a heated oven to a high temperature, but not sufficient to carbonize the oil. The metal absorbs the oxygen given out by the decomposing oil, forming at the surface a thin coating of brown oxide which admits of being finely polished. The addition of alumina to the bronze gives brilliant effect.

RECENT PATENTS.

The following list of patents is compiled from the records of the United States Patent Office, and especially reported to THE JEWELERS' CIRCULAR.

Issue of September 23, 1890.

DESIGN NO. 20,159.—BADGE.—NATHAN S. BOYNTON, PORT HURON, MICH., assignor to Boynton & Son, same place. Application filed Aug 7, 1890 Serial No. 361,396. Term of patent 7 years

DESIGN NO. 20,162.—CANE OR UMBRELLA HANDLE.—ALBERT ROSENSTEIN, Lancaster, Pa. Application filed July 31, 1890. Serial No. 360,573. Term of patent 3½ years.

DESIGN NO. 20,163 AND 20,164.—CANE OR UMBRELLA HANDLE.—ALBERT Rosenstein, Lancaster, Pa. Applications filed August 1, 1890. Serial Nos. 360,675 and 360,676 Term of patents 3½ years.

DESIGN NO. 20,170.—PLATE FOR CANES OR UMBRELLA-HANDLES.—FRANK H. La Pierre, New York, N. Y Application filed June 17, 1890. Serial No. 355,803. Term of patent 3½ years.

436,799.—INSCRIPTION DEVICE FOR UMBRELLA-STICKS.—JOHN MCLAUGHLIN, Westfield, Mass. Filed April 28, 1890. Serial No. 349,804. (No model)

436 783.—DUPLEX ESCAPEMENT FOR CLOCKS.—CHARLES B. HIBBARD, PULASKI, N. Y. Filed Nov 15, 1889. Serial No 330,463. (No model.)

436,831.—EYEGLASS-HOLDER.—JOHN H. KNOWLES, NEW YORK, N. Y. FILED June 28, 1890. Serial No. 357,114. (No model.) This eyeglass-holder consists of a body portion having a straight flat rear portion adapted to rest against a garment, an internal cavity, a narrow slit in the front face extending from the outside into the cavity, and a guide-rib adjacent to the slit.

436,905.—COIN-CONTROLLED OPTICAL INSTRUMENT.—EDWARD J. COLBY, Chicago, Ill. Filed Nov. 25, 1889 Serial No. 331,409. (No model.)

436,919.—CLOCK-CASE.—ALMERON M. LANE, MERIDEN, CONN. FILED DEC. 11, 1889. Serial No. 333,369. (No model.) In a separable clock and base, an attaching plate for the frame of the bell-striking mechanism, a shouldered tube having the attaching plate secured to one end, and a bell and a base-plate for attaching the clock-case secured to the opposite end of the tube.

436,920.—FASTENING FOR ESCAPEMENT-PALLETS.—ALMERON M. LANE, MERIDEN, Conn. Filed Jan. 17, 1890. Serial No. 337 237. (No model.) This pallet attachment consists essentially, of the shaft and collet the holder secured upon the collet, and the pallet secured upon the shaft by the holder.

436,921.—CLOCK-KEY.—ALMERON M. LANE, MERIDEN, CONN FILED APRIL 21, 1890. Serial No. 348,847. (No model) The combination of a central hub provided with a central bore at its outer end, a center-shaft extension, a sliding key mounted thereon, and spring-arms for engaging the bore of the central hub.

436,921.—ALARM-CLOCK.—ALMERON M. LANE, MERIDEN, CONN.—FILED APRIL 21, 1890. Serial No. 348,848. (No model.)

436,941.—CLOCK-PENDULUM.—GEORGE P. REED, MELROSE, MASS. FILED Nov. 6, 1889. Serial No. 329,409. (No model.) In a clock pendulum, the combination of the ball provided with two series of holes, the laminar curved bars or plates having also two series of holes, the holes of the bar and ball being oppositely replaced with respect to the line of suspension and with respect to each other, screws adapted to secure the plates and ball together, and the pendulum-rod provided with a movable weight resting on the free ends of the plate.

436,971.—EYEGLASSES.—FOWLER W. EMONS AND CLEMENT B. BISHOP, PHILadelphia, Pa., assignors to Horatio N. Fitzgerald, same place. Filed May 19, 1890. Serial No. 352,314. (No model.)

436,972.—GAGE FOR RINGS.—ALBERT W. ENGEL, CHICAGO, ILL. FILED JUNE 19, 1890. Serial No. 355,923. (No model.) A ring-scale for taking measurement for finger-rings, consisting of a flexible tape having a hook and scale-notches, and having clasp-hooks at a short distance from the hook adapted to receive the opposite end of the tape.

436,973.—SPINDLE FOR TIME-PIECE DIALS.—MARTIN V. B. ETHRIDGE, BOSTON, Mass., assignor of two-thirds to John Swann, New York, N. Y., and Henry E. Waite, West Newton, Mass. Filed Oct. 19, 1887. Serial No. 252,826. (No model.)

437,030.—SPECTACLE-GAGE.—MATHIAS J. HINDEN, CLEVELAND, O., ASSIGNOR to Julius King, same place. Filed Feb. 24, 1890. Serial No. 341,584. (No model.)

437,168.—CLOCK-SYNCHRONIZER.—ARTHUR G. WISEMAN, WEBSTER GROVES, Mo. Filed Oct. 19, 1889. Serial No. 327,555. (No model.)

437,121.—EYEGLASSES.—JULIUS KING, CLEVELAND, OHIO. FILED MAR. 7, 1890. Serial No. 342,990. (No model)

Issue of September 30, 1890.

DESIGN NO. 20,173.—SPOONS, &c.—JOHN T. CURRAN, BROOKLYN, ASSIGNOR TO Tiffany & Company, New York, N. Y. Application filed July 26, 1890. Serial No. 360,095. Term of patent 14 years.

DESIGNS NOS. 20,174 TO 20,176, INCLUSIVE.—BRUSH OR MIRROR BACK.—Rudolph Fuchs, Staten Island, N. Y., and George B. Beiderhase, Jersey City, N. J Applications filed August 21, 1890 Serial Nos. 362,683 to 362,685. inclusive. Term of patent 3½ years.

DESIGNS NOS. 20,174 TO 20,186, INCLUSIVE.—BRUSH OR MIRROR BACK.—Rudolph Fuchs, Staten Island, N. Y., and George B. Beiderhase, Jersey City, N. J. Applications filed Avgust 21, 1890. Serial Nos. 362,683 to 362,689, inclusive. Term of patent 3½ years.

TRADE MARK NO. 18,464.—WATCH-CASES.—KEYSTONE WATCH CASE COMPANY, Philadelphia, Pa. Application filed Aug. 23, 1890. Used since Jan. 1890. The word "Non-Pull Out," composed of three parts, "Non, Pull, Out," connected by hyphens.

TRADE MARK NO 18,479.—JEWELRY AND SOLID AND PLATED GOLD AND Silver Ware.—E. A. Bliss Co., New York, N. Y. Application filed June 14, 1890. Used since May 1, 1890. The words and figures "World's Fair Souvenir, Chicago, 1893"

437,203.—METHOD OF ADJUSTING WATCHES.—GEORGE E. HUNTER AND Frederick H. Corthell, Elgin, assignors to the Elgin National Watch Company, Chicago, Ill. Filed Sept. 23, 1889. Serial No. 324,820. (No model).

437,204.—METHOD OF ADJUSTING WATCHES.—GEORGE E. HUNTER AND Frederick H. Corthell, Elgin, assignors to the Elgin National Watch Company, Chicago, Ill. Filed Sept. 23, 1889 Serial No. 324,821. (No model.)

437,205.—APPARATUS FOR ADJUSTING WATCHES.—GEORGE E HUNTER AND Frederick H. Corthell, Elgin, assignors to the Elgin National Watch Company, Chicago, Ill. Filed Feb. 13, 1890. Serial No. 340 320. (No model.)

437,206.—APPARATUS FOR ADJUSTING WATCHES.—GEORGE E. HUNTER AND Frederick H. Corthell, Elgin, assignors to the Elgin National Watch Company, Chicago, Ill. Filed Feb. 13, 1890. Serial No. 340,321. (No model.)

437,273.—BUTTON OR STUD.—FRANK E WILLIAMS, NEW YORK, N. Y. FILED April 9, 1890 Serial No. 347,228, (No model.) A button or stud having a bent shank and a bar or shoe pivoted to a shank and having a projection extending upward flush with the top surface of the bent portion of the shank.

437,317.—JEWELERS' BLOW-PIPE.—ROBERT J. TAYLOR, PROVIDENCE, R. I., assignors to Wm. H. Shattuck, same place. Filed April 29, 1890. Serial No. 349 845 (No model.)

437,636.—WATCH-MOVEMENT HOLDER.—EDGAR ALLEN CHICAGO, ILL., assignor of one-half to Mary S. Heath, Bebe Plain, Vt. Filed Jan. 20, 1890. Serial No. 337,439. (No model.)

437,345.—APPARATUS FOR PINNING WATCH-BALANCE SPRINGS.—EDWIN J. Hall, Waltham, Mass. Filed Feb. 25, 1889. Serial No. 301,021. (No model)

437,647.—WATCH-MAKER'S TWEEZERS.—RHODOLPH H. FRANKLIN, BROOKLYN, N. Y., assignor to Charles C. Cummings, same place. Filed Mar. 27, 1889. Serial No. 305,022. (No model.)

437,648.—PROCESS OF ORNAMENTING WOODEN SURFACES.—MYER HECHT, New York, N. Y. Filed July 5, 1890. Serial No 357,707 (No specimens.) This process of ornamenting wooden or non-metallic substances, consists in first channeling the design in the surface and undercutting the walls; second, filling the channels by electro-deposition of metal therein; third, grinding down the metal to the service of the wood and engraving designs thereon or finishing the same, and, fourth, stopping out the wooden portions between the metal plate with non-conducting substance and electroplating the exposed metal portions.

437,550.—SAFETY ATTACHMENT.—JAMES A. ARMENTROUT, STAUNTON, VA-Filed Mar. 3, 1890. Serial No. 342,524. (No model.)

Issue of October 7, 1890.

DESIGNS NO. 20,195 AND 20,196.—MEDAL.—MAIER WEINSCHENK AND WILLIAM Boldenweck Chicago, Ill. Applications filed July 25, 1890. Serial Nos. 359,999 and 369,970. Term of patents 3½ years.

TRADE MARK NO, 18,497 TO 18,499.—MUSIC-BOXES.—HENRY GAUTSCHI, PHILadelphia, Pa. Application filed September 12. 1890 Used since September 1, 1890. The words "Piccolorettes," "Mandolinettes," and "Supremettes."

TRADE MARK NO. 18,500.—WATCH CASES.—ESSEX WATCH CASE COMPANY, Newark, N. J. Application filed September 10, 1890. Used since May 1, 1889. The representation of a jockey-cap.

437,690.—WATCH-BOW FASTENER.—JULIUS W. HANSEN, HUMPHREY, NEB, Filed Mar. 22, 1890. Serial No. 344,862. (No Model)

437,683.—STOP WATCH.—HERMAN J. EISEN, BROOKYN, N. Y. FILED MAY 17 1890. Serial No. 352,126. (No Model) The adjoining spring-levers having mid-length projections at different distances from their fixed outer ends, in combination with a cam-wheel, a heart-cam, a stop-wheel, an arbor, and a split-seconds hands.

437,796.—DEVICE TO FACILITATE THE DRILLING OF HOLES CENTRALLY IN Staffs for Watches, &c, William M. Preston, Rondout, N. Y. Filed April. 8, 1890. Serial No. 347,038. (No Model) This consists of the rotating disk or plate with graduated conical perforations, in combination with any suitable handle for operating the same by hand or in connection with the sliding rest of a lathe.

437,862.—JEWELERS' STOCK.—GEORGE E. A. KNIGHT, PROVIDENCE, R. I. Filed July 2, 1890. Serial No. 357,519 (No Model.) Jewelers' stock consisting of a sheet of base metal having one side plated with strips of precious metal of different colors folded and condensed to form a bar, rod, or wire, the outer surface of which consists of stripes of different-colored precious metals.

437,905.—ELECTRIC ADVERTISING-CLOCK.—MORITZ LEVI, NEW YORK, N. Y., assignor of one-half to Rasmus Forsholm, same place. Filed June 25, 1890. Serial No. 356,756. (No Model.)

437,965.—KEY FOR TIME-PIECES.—MARTIN BOCK, HAZELTON, PA. FILED Oct. 9, 1889. Serial No. 326,362. (No Model.) A key for time-pieces consisting of a handle, a pipe or spindle, a friction-block interposed between them, and a push-piece to connect the friction-block, combined with a spring for connecting the push-piece and the handle.

437,984.—BURGLAR-ALARM ATTACHMENT FOR ALARM CLOCKS.—CHARLES O. Farciot, San Francisco, Cal. Filed Dec. 3, 1889. Serial No. 332,440. (No model.)

438,094.—WATCH-BOW FASTENER.—EDWARD C. CHAPPATE, PHILADELPHIA, Pa., assingor to the Keystone Watch Case Company, same place. Filed Mar. 8, 1890. Serial No. 343,085. (No Model.)



Proceedings of the Watchmakers' and Jewelers' Union.

[NOTICE.—We shall be pleased to receive and discuss descriptions of new tools, attachments and improvements in any branch of our trade, and publish them free of charge; also inquiries for those desiring information on any point of general interest. Communications should be written as concisely as possible consistently with clearness, on only one side of the paper, and be received here by the 10th day of the month, in order to be discussed at our meeting for that month and inserted in the next issue of THE CIRCULAR. Address them to "Secretary of the W. & J. U., care of THE JEWELERS' CIRCULAR, 189 Broadway, New York." For full information for correspondents, see our Proceedings in THE CIRCULAR for October, 1889.]

Thirteenth Meeting.—Reported by the Secretary.

Owing to extremely stormy weather on the evening of this meeting not many members were present, but the proceedings were nevertheless lively and interesting. The first letter was on the important topic of

WATCHMAKERS' WAGES AND WORK.

Decatur, Ill., Oct 4, 1890.

Secretary of the W. & J. U.:

Will you please answer the following questions for me?

What wages are paid to watchmakers per week in the city, and also in towns the size of Decatur, or with a population of 20 000 to 30,000?

About what amount of work in dollars and cents do watchmakers generally turn out per week?

Please give me as accurate information as you can obtain, as it will help me a great deal, and I will be greatly obliged.

Yours truly. WATCHMAKER.

MR. UHRMACHER was requested to answer these questions, and said that he thought the majority of watchmakers in New York received $20 a week and under, although some fine workmen got $25, while experts or specialty men would get $30 to $35. In towns of the size specified, or from 20,000 to 30,000 inhabitants, wages would probably average the same as in New York.

As regards the second question, no definite answer could be given; the rates for the same job vary in different localities, and in the same place some firms would charge more or less than others for the same work. It was safe to say, however, that a watchmaker always earns his salary.

MR. BENCHMAN thought that the majority of the watchmakers in New York get under $15 instead of $20, and the number who get $25 was very small indeed. As for those who get $30 and $35, he would hardly call them "all-around watchmakers." They were generally finishers, springers and adjusters, and got extra pay because they had special skill or training, such as ordinary watchmakers did not possess or had no occasion to possess or use. This was an advantage of course, as long as they had a place to utilize their special talents. But such places are few and if lost it was difficult to find another, while the ordinary watchmaker could suit almost anywhere.

Wages are low in New York, not only on account of the excessive competition, but also from the growing custom of sending work out of the store to men who work for the trade at specially low rates. The rates are so low in fact that it is hard to make a living at such work. Only a short time ago a friend of his, a very excellent and quick workman, brought up in the Swiss watch factories, returned to Switzerland discouraged; after several years' trial he had to give it up, and went home almost penniless. But, after all, this custom is no more satisfactory to the dealer than to the workman. The former saves the expense of shop, tools and wages, but he never knows much about the job or how it is done, and has hardly confidence enough to warrant it. If it proves unsatisfactory he seldom has anybody to fall back upon, and has to stand the blame himself. The customer, too, is unsatisfied, for he sees no watchmaker and gets no full and confident warantee, as he thinks he has a right to expect. He is consequently suspicious of something wrong, and will not be satisfied even if the job is perfect. There is only one way to do business that will strike the public as legitimate and square and satisfy the customers, and that is to have your own shop, with a good watchmaker, so that you can warrant the work to be well done, and the customer can see that you have facilities for doing what you claim has been done, and for making the job good if anything happens. If this were the rule, business would be better and wages higher.

MR. BENCHMAN said that the amount a watchmaker could earn depended not only on the prices, but on the amount of work to be done. In one place where he had worked in the days when he had roamed the country as a "jour.," the price of cleaning a watch was $1.00, a mainspring the same, and other jobs on the same scale. Notwithstanding these low prices there was so much work to be done that it kept him "hustling" from morning till late in the night, and for a long time he averaged $50 a week, or $200 a month. In one week, when he selected his jobs, he earned $101.50. These amounts were not mere charges, but were actually collected in cash, for he had not only to do the work, but he took the work in, delivered it, collected the pay, and did the subsequent regulating and fussing with customers, which is always required. The secret of the fast workman is *thorough work*. Insist upon doing all that *needs* doing to put the watch in order, even if you do not get pay for all of it—then it is sure to do good service. This may seem rather slow, but in the long run it is the quickest way. When he finished a watch and hung it up he knew it was *done*, and would "stay put." He did not have to take it apart and do a little more to it the next day, and the next, and the next, but when he had booked it and put it on the rack that watch was out of the way. Some workmen never get a job finished. They only half do it, and have to be continually tinkering at it. Even after the customer gets it it is back in the shop half the time, getting more tinkering. Such men are never fast workmen.

But it is not always the fault of the workmen, for he may not be allowed by the boss to do any more than he is paid for, and is expected to make a watch do good service when it is *not* in good order. He cannot turn out a large amount of work under such circumstances, nor give satisfaction. Again, there is often very little work to be done. He had worked in shops where the watchwork came to less than his wages, and the boss wanted him to go out and hunt up jobs. In one case the boss got his (MR. BENCHMAN'S) name stamped on two hundred of the firm's business cards without consulting him, and then handed him the pack with instructions to distribute them among the business men of the town, making himself acquainted and soliciting work. Needless to say that he declined the job. He was there to do the work of the firm. If there was none, that was not his fault. The idea that he was to drum up the work, as well as do it, he thought absurd.

MR. O'PINION did not see anything absurd about it. All large concerns send out men to drum up business, and if the watchmaker was not earning his wages he thought it no more than right that he should make some effort to bring in work. A man is not hired to sit on a stool and do nothing, but is expected to do what he can towards building up the watch business.

MR. BENCHMAN still insisted that the place for the watchmaker was in the store, in readiness to meet callers or customers, and do anything that might be required in his line. His line was not a drummer but a watch repairer. But leaving out these extreme cases —being overburdened with work, and having very little to do—and

taking the average run of shops, he thought that if the workman did jobs enough to pay his wages, materials and actual expenses of his department, the boss ought to be satisfied. If he did more than that he did well. But he did not think that dealers should expect to make a *profit* on the watchmaker, save in exceptional cases. If he paid all the expenses of his department, put the store watches in order and took care of them, besides assisting at sales when occasion called for it, he did very well. The gain to the dealer was in the standing and benefit to his business, in getting his watch work done for nothing, and in the workman's assistance in sales and taking care of the stock and store. On this basis anybody can figure out how much a watchmaker ought to earn per week—more if he can.

HOW WAS THAT PICTURE TAKEN?

Albany, N. Y., Oct. 9, 1890.

Secretary of the W. & J. U.:

In your Proceedings for last month there is a picture of a mainspring barrel spoken of, which was said to be over four inches in diameter. As the barrel is only one inch in diameter, I do not see how it could be four times as large in the photograph. I was not aware that anything could be taken *larger* than life. Please explain how it is done?

PUZZLED.

MR. JOBBERSON was delegated to answer, as he had frequently exhibited photographs of his improvements before the UNION. He said he did not profess to understand photography, but he thought a picture on glass was first taken, of the ordinary size, then this was put into an enlarging apparatus, with a powerful light passing through it and forming a large image upon sensitive paper, which latter became an enlarged photograph. Or the image can be thrown on glass, from which any number of photographs can be printed in the usual way. He believed there was also another method, by which opaque objects were very brightly illuminated, and an enlarged image is thrown directly on glass, to make the "negative," from which the photographs are printed. The process of making enlarged pictures is very useful for showing up fine and intricate mechanism, making everything plain to be seen, and enabling measurements to be taken which could not be done with the original.

THE BRITTLENESS OF DIAMONDS.

New York, Oct. 9., 1890.

Secretary of the W. & J. U.:

I heard a lecturer assert that a diamond is so hard that if laid on an anvil and struck with a steel-faced sledge, that it would enter the face of the hammer or anvil before it would break. Is that so? Would you be willing to submit a valuable diamond of yours to such a test?

W. D. D.

MR. LAPIDARIST declared emphatically that the statement made by the lecturer was not true. The diamond might be hard enough to penetrate into the steel as described, but it is also brittle and has a tendency to split in certain directions called the plane of cleavage, very much as if made of thin layers. When a sharp-edged tool is struck against it in that direction, as if between two layers, a very slight blow will split a large diamond. It is barely possible that a small fragment of the gem, if laid on the anvil with a split surface downward, and struck transversely to that surface, on its other side, might be driven into either the hammer or anvil. But the probability is that it would be in many pieces when it got into them, and even if it did not go into them.

A diamond is often used as a cutter or drill for working very hard substances, by arranging it so that the strain coming upon it has no tendency to cleave it, but comes on a natural sharp edge or corner. Even when so arranged and supported it has to be carefully handled to avoid breakage. You will find a glazier refuses to let any one else use his best diamonds, even to cut flat glass plate, so well does he know their fragility. Hardness does not imply toughness. A file may be harder than an anvil or hammer, but if laid on the anvil and struck with a sledge, would it "enter the steel," or would it "fly into a thousand pieces?" Diamonds are pulverized every day, either with a hammer or pestle, to make dust for cutting and polishing other diamonds or hard substances. Wearers of diamond rings often find to their cost that they are brittle stones by using the corners to scratch glass and write on it, till some day they discover the corners are broken off.

This being all the business, the meeting closed.



[FROM OUR SPECIAL CORRESPONDENT.]

ENGLISH VIEWS OF THE NEW AMERICAN TARIFF—TRADE, PRESENT AND PROSPECTIVE—NOVELTIES OF THE SEASON.

LONDON, ENG., Oct. 10, 1890.

The principal topic of conversation, for the past fortnight especially, has been the passing of the American Tariff Bill. There has not been much doubt that it would finally become law, but the abrupt haste with which it has become so has not only been a matter of surprise but has caused much annoyance, and in some cases considerable loss. The members of our jewelry and watchmaking trades are more interested in the effect the bill is having, and is going to have, on the general trade of the country, than in its direct bearing upon their contracts. There is even now some uncertainty as to how far their trade will be influenced. The tariff itself is a very lengthy one, and it has not been found possible to send by wire anything like a complete summary of its text. The first copies of this tariff have only reached England this morning. It is most singular, to my mind, that notwithstanding the importance of the matter, manufacturers in so many industries have been content to remain, until this very day, in uncertainty as to the precise effect of the McKinley Bill on their own trade. Perhaps nothing has told so much against this bill as the unseemly haste there has been to run in as many goods as possible under the old act. It is well known that in expectation of great changes in the American duties many manufacturers, whose trade lies chiefly with your country, rushed into it as many goods as they possibly could. The belief that the act would not come into force until Nov. 1, caused exports to be continued up to the very end of September in the expectation that they would be in time to be admitted under the old regime. How many will now be found not bearing the indication of place of origin as required, it is difficult to say, but the disappointment and loss under this section alone is sure to be great. I understand that your retail trade has been more lively during the last few days of September and the first few of October than it has been for a long time past. Does not this show that your consumers are as averse to high prices as ours? It is perhaps scarcely in order for me to discuss the bill in your columns, but I am merely reflecting a widely spread belief in this country that your people would have submitted with more or less complacency to a moderate increase in your tariff, but that the oppressive duties levied by this bill will bring about some sweeping changes, and before long, too.

We are not so foolish as to imagine that you cannot get along without us; at the same time it is beyond doubt that British dealings form an important factor in American exports. It should therefore be remembered that where we sell most we shall endeavor to buy most, and that as by virtue of the never failing law of supply and demand, we are sure to have offered us from other countries supplies to take the place of those coming from America, we shall cultivate those markets with the view of increasing our exports to them.

We may suffer for a time from the operation of the new tariff, but it will be for a time only. Our manufacturers are sanguine of finding increased outlets for our products in Australia, China, Africa and elsewhere, and it will follow that we shall obtain all the supplies we can from them.

So far I have referred to the operations of the new bill generally. Our jewelry and kindred industries are always materially influenced by the fluctuations in other industries, and particularly by the variations in the heavier trade of the country. A brisk turn over in our iron and steel and coal trades provides a greatly increased

spending power throughout all classes, and our trade always partici pate in the benefits of it. But there are some features of the new bill that affect us directly, and these are very freely canvassed just now. In chronometers, watches, parts of watches, cases, glasses and movements the ad valorem duties remain as they were. But when we come to jewelry, which is made to include all articles com posed of precious stones or imitations thereof, whether set with jet, coral, diamonds, pearls, rubies, cameos, or other precious stones, or imitations thereof, the import duty is increased from 25% to 50% ad valorem. This is protecting your native industries in earnest Whether by doing so you are considering the greatest good of the greatest number (the greatest number being consumers) is a ques tion upon which I suppose we shall not agree.

If any apology is needed for my lengthy reference to this new tariff it must be found in the circumstance that it is the one great subject of conversation wherever I go.

Turning now to our own affairs, I am glad to say there is apparently good business doing all round. Everyone seems fully occupied. All branches of our trade are doing fairly well, and many of the smaller makers are not anxiously seeking orders. As a rule, this is just the time when our travelers are being pressed by their principals to get hold of all the orders they can for the Christmas trade. The fact, therefore, that many order books are fairly full is significantly encouraging. Wedding rings are in steady demand, and as better qualities are selling in preference to cheaper kinds we may assume that there is more money available for such necessaries. Makers of diamond and stone-set rings and goods generally are busy. The orders already on hand for brooches will make a good contribution to the total of our season's trade. There is a general expectation that in addition to what is now being done a brisk winter's trade may be expected.

There is a run just now upon twisted gold for various kinds of ornaments. The gold is twisted into a spiral or cable, and then the article fashioned from it. For instance, there are cable gold horseshoes, cable bracelets and even cable rings, cable bangles. For bracelets a row of small diamonds twisted round the cable, or a few stones set in the top of each twist of the cable are very effective. Chain bracelets are much worn just now, the chain formed of large loose links.

Another novelty is an expanding watch-bracelet. It is the bracelet that expands, not the watch. I have just seen some very pretty gold ones—the bracelet formed of figured and plain gold bars arranged in trellis style, and expanding and closing like ordinary trellis work. The bracelets are very showy, and there is scope for a variety of stone-setting round the watch. There is no difficulty in adjusting these bracelets. They readily expand so as to be passed over the hand, and will close so as to fit the most delicate wrist.

I have also just seen some pretty brooches in the shape of a gold buttercup, with a pearl in the center and diamond sparks tipping the stamens.

There is still a good demand for the usual variety of articles in oak, walnut, etc., mounted in gold and silver, and Messrs. Grinsell & Co., of Charterhouse street, London and Birmingham, have some original designs. This firm produces many things that are entitled to notice as works of art. Some recent fashionable weddings have disclosed the fact that this class of mounted woodware is growing in popularity. Many items such as salad bowls cruet stands, spirit cruets, gongs, etc., being made specially for wedding presents. China and glass are not in such great demand for mounting here as they were a short time ago. If anything, there is more glass, good cut-glass, used at present than china. Probably because the glass manufacturers have brought out better designs more frequently than the china manufacturers have. The rise in the cost of silver has been a source of perplexity to our manufacturers all round, and as there are indications of further advances, some anxiety is felt as to the future.

As a matter of fact, our silver manufacturers are but little if any cheaper at present than they were before the plate duties were taken off. The present high price of silver affects manufacturers of sterling and plated goods, but the latter will probably feel it most.

Amongst the goods provided and now being got ready for our Christmas trade I notice diamond and gem rings take a prominent place. Our manufacturers are getting out of some of their old-fashioned ruts, and are introducing more new designs than usual. Attractive new designs will interest customers and promote a trade which the same old patterns shown year after year would fail to do, however pretty and enticing they may have been originally.

There has been much complaint here about the rapidity with which any really good original design produced in gold or sterling silver is imitated in plated goods. Wearers of gold ornaments lose much of their admiration for them when they find the same patterns sold in imitation metal. Something is being done to check this piracy by retailers deferring the exhibition of the best novelties in their windows. It requires some little effort on the part of a shopkeeper to refrain from showing the best he has in his windows. But some are spirited enough to do it. It certainly gives the genuine production more time to get well sold before the appearance of the inevitable imitation spoils the further sale of it. In one shop window, in the midst of a by no means inferior display, I recently saw a beautifully executed card bearing the following original and significantly worded legend: "The finest pieces of the newest designs are not exposed in the window. Kindly walk inside and inspect them. Visitors doing so will not be importuned to purchase."

An event of considerable interest was the opening last month of the Birmingham Art and Technical Schools. The event is considered of national as well as of local importance. These new art schools are to furnish the British workman with the only qualification in which he is said to be deficient—that is artistic skill. The effect of these schools on the jewelry trade is anticipated with much hope. Artistic merit in workmanship is now as much sought after as intrinsic value in jewelry.

This merit it is believed the British craftsman will soon be as well able to impart as the workman of any country in the world. It is the aim of these schools to enable him to do it. Experience has taught us that this requires something more than books While we do not propose to neglect the developing and strengthening of the mental faculties, we propose by these schools to train the hands and eyes of the youths who are to become our workmen, to give them strength, precision and flexibility, and to enable them to exert these promptly in obedience to the will of the theoreticaliy trained mind.

VIGILANT.



PROVIDENCE, Oct 20, 1890.

It has been declared that Providence makes what the world makes. If this be not founded on exact truth, it may serve to define the diversity of manufacture. The trade of the jeweler and arts akin, are among the foremost in this city, ranking a close third in importance with cotton and iron industries, and Providence is the largest manufacturing jewelry center in the world. The growth and development of the trade, and the agencies and accessories thereto, form one of the most interesting chapters in the business history of the city.

The size and extent of the jewelry business is scarcely known to the majority of people, not even to those from other cities, who are brought in direct contact with the manufacturers. According to

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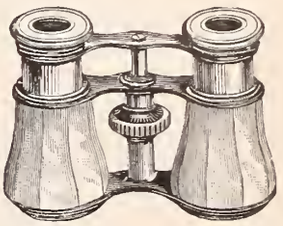
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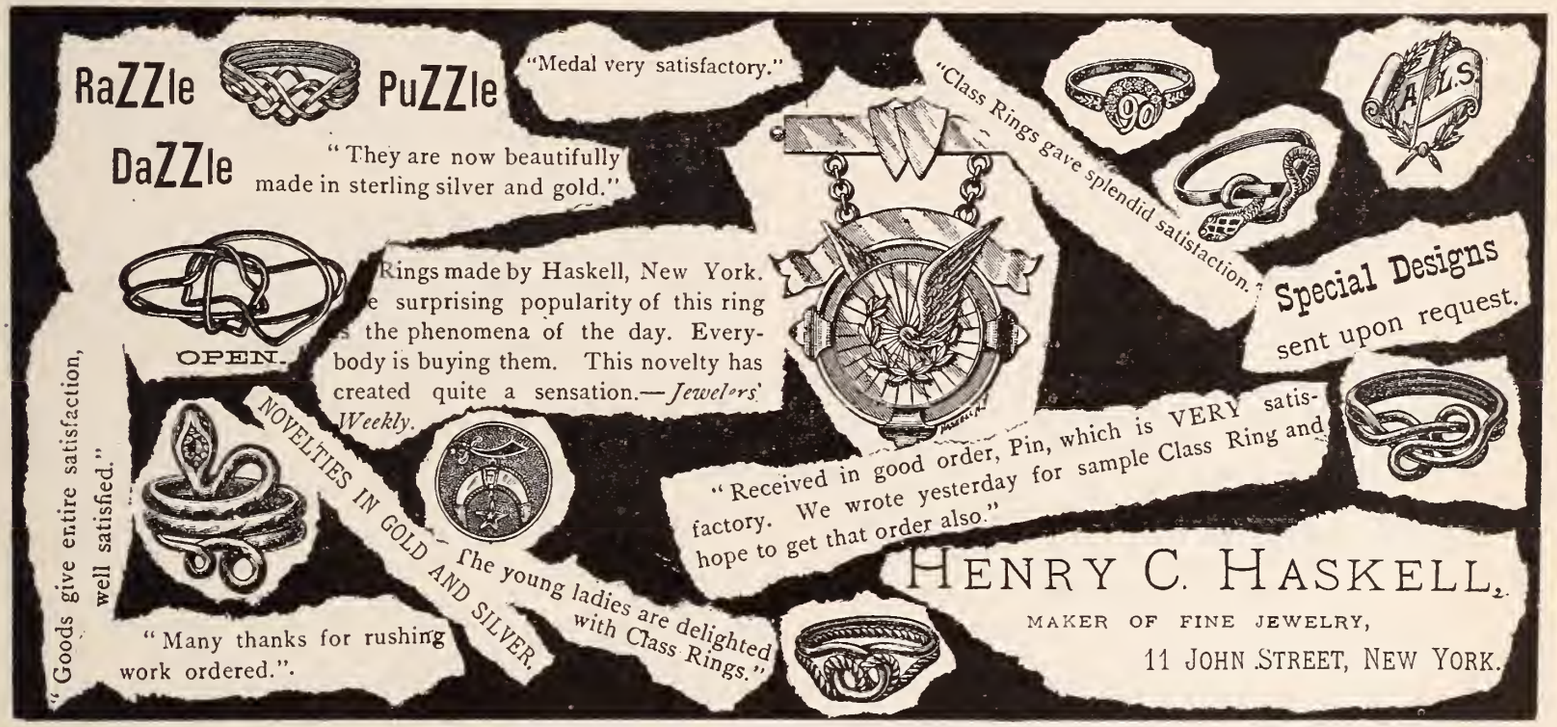
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the census recently completed Providence has a population of 134,749, and of this number fully 10% are connected in some way with the manufacturing jewelry business or one of its many dependent branches. There are 224 manufacturing jewelry concerns in this city, paying taxes on almost $5,000,000 worth of property, and this amount is steadily increasing every year. In 1889 there were but 209 concerns, taxed for only $4,250,000, and in 1891 the taxable property will be considerably greater from the fact that since the valuation of property by the tax assessor several firms have erected buildings of their own.

Ten years ago the idea of a manufacturer's owning his own shop was not so prevalent as at the present day. Not more than two or three firms then owned the buildings they occupied. But of recent years this idea of ownership has become so much broader that today the following concerns have buildings either occupied by themselves or rented, either in whole or in part, to other manufacturing jewelers: G. & S. Owen & Co., S. & B. Lederer, H. C. Ludwig & Co., Union Eyelet Co., John Austin, Michael Fitzgerald & Co., Richardson & Hicks, Horace Carpenter, S. B. Champlin & Co., Gorham Manufacturing Co., Hearn & Braitsch, William H. Luther & Son, and Kent & Stanley.

During the past month business has been exceptionally good, and the indications at present are that it will continue so up to the first of the new year. Orders have been brisk and of good amounts, and, what is more encouraging, have been generally duplicated, showing a tendency to steady trade instead of business booms such as have become customary for several seasons past. Collections on the whole have been better than for some time, and the practices of dating bills ahead, allowing large discounts, consigning goods and long time are features of the business long since relegated to days gone by. The consequences of such a change in the method of transacting the manufacturing jewelry business are readily to be seen in the greatly diminished number of failures. Since my last letter there has been but one failure of interest to the manufacturers in this vicinity, that of the Providence Jewelry Co. of Cincinnati, whose liabilities in this city amounted to but $1,500.

John D. Benton, more familiarly known as Dean Benton, died at his home in East Providence, Oct. 18, after an illness which confined him to his house for nearly two years. He was born at Fort Independence, South Boston, Mass., in 1823, his father being in the U. S. service on duty. He subsequently removed to this city with his parents, and learned the jewelers' trade with Richardson & Hicks in the old shop, corner of Page and Friendship streets, and worked at the trade for a number of years, and later in Rochester, N. Y. When the war broke out he enlisted in Co. K, Second Rhode Island Regiment as a private, Aug. 1, 1861, and was appointed first sergeant, Sept. 25, 1861. He was discharged for disability, Jan. 27, 1862, rheumatism in the hands being the main trouble. This was contracted while in the service, and eventually led to his death. After his discharge from the army he went to Wilmington, Del., and went to work making surgical instruments to be used in the army. While here he began the work which afterwards made him famous. At the hotel where he was stopping inquiry was made one day for a man who could make a model of the Monitor, the iron vessel built by Ericsson. Mr. Benton undertook the task, and made a small model of the Monitor, with the revolving turret. The model was made of gold, and was used by its owner as a watch charm. Although very small, the turret would revolve and the propellor would move. From this time on Mr. Benton had all he could attend to making models, and he soon began to make larger ones. One of the first good sized working models he ever made was for the late Capt. Ericsson, the inventor of the Monitor, and who was always a great personal friend of the deceased. He made for Ericsson a magnificent working model of the frigate Roanoke. He made a large number of models for leading gentlemen, firms and corporations in this country, having $36,000 worth of work for Charles Morgan, of New York, which consisted of working models of steam yachts, locomotives, steamships, and other things, all of which Mr Morgan prized very highly. He also made a number of models for the Vanderbilts, and several models of Pullman palace cars, with everything complete, for Mr. Pullman. During the centennial exhibition he lived at Philadelphia, and had thirteen working models on exhibition, among them a model of the celebrated Corliss engine used at the exhibition. Another famous model was that of Independence Hall of Philadelphia, inside and out, the furnishings, even the pictures on the walls being complete. In the tower was a miniature clock, which kept excellent time. This model was thought by many to be his masterpiece, and it is now in Philadelphia.

After the centennial he removed to this city, where he still carried on his business of model maker. For the past few years he has made models for himself, and placed them around in public places, where, by dropping a nickel in the slot, people could see t'em work. From these he reaped quite a benefit. For a year or two past he has been unable to work, having never recovered from the rheumatism, which he contracted during the war. His hands were drawn out of shape so that it seems wonderful that he could handle a tool at all, let alone making such magnificent models as he has during the past twenty-five years. He leaves a widow and married daughter.

The removal of H. Ludwig & Co. from 195 Eddy street to their new building, corner of Blackstone and Gay streets, gave an opportunity for quite a number of changes. Their old quarters in the Fitzgerald Building were altered and renovated by the owner for the occupancy of the J. M. Chandler Co., who removed from 27 Page street, and John Moore & Co., from 35 Point street, who will have the shop together. The J. M. Chandler Co. is a comparatively new firm, although the partner from whom the concern receives its name is well known in the trade, having been a manufacturer and wholesaler in Cleveland for upwards of twenty years. The headquarters and office of the company are at 204 Superior street, Cleveland, O.

William H. Bowers has withdrawn from the firm of Cameron & Bowers.

Foster & Bailey are driven to their fullest capacity on orders, and have been working nights until nine o'clock for upwards of four or five weeks. This firm is one of the few in the business whose shops are practically never shut down, the principal reason for this activity being found in the large lines of new styles which the firm's representatives have to introduce to the trade every season.

The members of the Manufacturing Jewelers' Board of Trade have just made a settlement with Max Archer, assignee of L. Block & Co., of Milwaukee, Wis. Block & Co. failed last May with liabilities in this city amounting to about $12,000. The settlement effected amounted to 8 per cent.

The Adams Express Company closed their office corner of Dorrance and Broad Streets, October 1, the company having moved into their new quarters on Eddy Street next to the Earl & Prew's office and opening into the latter. It is understood that the Adams Company do not leave the field, but, run their own teams as heretofore, the Earl & Prew Co. maintaining the business in this city and the Adams Co. paying them for the transaction thereof at a price which will not be divulged. The business of both companies will thus go on together, but it is supposed that one team will do the work of two, and will carry both Earl & Prew and Adams freight, the driver turning in vouchers to both companies.

Hearn & Braitsch have finished their removal into the new building, corner Melrose Street and Potters Avenue, and have commenced work in their new quarters.

F. J. Favro has removed from the Slade Building, corner of Washington and Eddy Streets, to 48 Washington Street.

Fred H. Cole has removed from 399 High Street to 14 Page Street.

E. H. Fairbrother has engaged in business at 77 Westfield Street.

T. J. Linton has been working quietly for several weeks securing options of land in Elgin, Ill., and getting guarantees of aid in the shape of land and buildings. Everything looks favorable for the consummation of an important enterprise in the shape of a brass rolling-mill, novelty works, and eventually another watch case factory. It is reported that several Chicagoans are interested in the project.

Ostby & Barton have leased the entire building of five floors at 80 Clifford Street, with the exception of the ground floor occupied by Edwin Lowe, platers. Ostby & Barton have for several months occupied two floors, but their increasing business demanding more space they have been compelled to lease two additional ones.

The first regular meeting of the Board of Directors of the Manufacturing Jewelers' Board of Trade since the adjournment in July, was held in the rooms of the Board in the Wilcox Building, at 1.30 P. M. Saturday, October 18, a majority of the members being in attendance. One firm was admitted to membership increasing the membership roll to 119. The Board is in a flourishing condition at the present time, and the results obtained through its influence have been highly satisfactory. Considerable business of importance was transacted and the meeting adjourned.

One of the most important decisions to manufacturing jewelers and others of an inventive turn that has been given in the courts for a long time was that handed down by Judge Gray of the United States Supreme Court, in the United States Circuit Court of this city, on October 18, in the equity case of Theodore W. Foster, of Foster & Bailey *vs.* Crossin & Tucker, both manufacturing jewelers of this city. On June 10, 1884, Mr. Foster obtained a patent on the pattern of a miniature spoon or fork mounted in the form of a lace or bar pin and immediately had a big run on it. Recognizing the salable qualities of these novelties, Crossin & Tucker began to manufacture a similar article and place it upon the market. Mr. Foster commenced suit and the case has been pending ever since. On the 18th inst. Judge Gray dismissed the bill with costs giving his decision against the plaintiff, his decision being to the effect that an article of common or daily use reduced in size and adapted to the use of jewelry could not be claimed as an original idea, and consequently one firm had an equal right with another in its use.

CINCINNATI

[From our Special Correspondent.]

Cincinnati, Oct. 25, 1890.

Human nature is effervescent, andmoney ebbs and flows. Everything points to a rosy holiday trade. There is a tonic in the very air we breathe. A bracing medicine for our nerves are the waves of success that have been with us in all trades. Every realm of endeavor is influenced by this. A leading dealer said the other day, he never saw such avidity on the part of his customers to get the latest and best. There is an immensity of replenishment that is good for the retailer, for the jobber and for the manufacturer. The stocks of diamonds and precious stones that are in preparation for ante Christmas display, exceed anything ever heard of in this section before. Our jobbers are importing everything to delight the eye and charm the mind The winter fever of rivalry is on. Every dealer is making the most of his stock by attractive displays. This goes to prove that progress has made it necessary to attract by the eye, to catch the trade.

This brings us to an interesting theme—that of window-dressing. It has become an art among leading jewelry houses in Cincinnati. The most fossilized old trades-man is moved. There is a brightness in the old shop that would astonish one of its quondom customers if he should drop in.

Among the 4th street houses, A. & J. Plaut make elaborate window displays. They have every facility in point of architecture to favor them. The plate glass reaches to the floor on either side of the entrance. Here is where Chas. F. Goettheim, a graduate of the Cincinnati School of Design shows his skill in artistic display. Red, white and black are used as back-grounds, with mammoth vases to give it a masterly air. Some weeks ago a French artist was in the city, and he was so struck with the artistic arrangement, that he made a sketch of the windows. Wm. McGrew, a Cincinnati pioneer jeweler, says, on his recent trip to Chicago he did not see a display to compare with Plaut's.

C. Hellebush has in Mr. Ed. Lovell an artist who dreams of an Arcadia every week, which he makes real in the windows to enchant the passer-by. Soft silks and plushes alternate in use. When Mr. Lovell makes a display of jewels he uses the softest shades in silks, and with the more elaborate silver pieces he uses plush. It has become a noted fact that Hellebush is a great importer of novelties, and everybody is on the qui-vive for novelties each week.

Duhme & Co. have four large windows. Messrs. Barber & Lincoln have charge of the jewelry and tableware which they show up in jewelistic splendor. Their conceptions are so multitudinous that the public are kept in active wonder. Mr. Ed. Morris is the finest connoisseur in pottery and bric-a-brac in the city, and the west window is his special pride. Mr. Hookinson makes his display in optical instruments of the very best in the market.

Clemens Oskamp's windows represent thousands of dollars. Louis H. Beck superintends the arrangement. Plushes and satins, with delicate sash curtains enhance the display. It is astonishing what a big fortune there is in one of these windows, and only a plate glass as a protector. It creates a stir, but the more prudent ones condemn it.

Strauss & Stern, on Race street, have big windows that W. S. King arranges once a week; he takes great pride in making it beautiful. An immense lot of bronzes take up one window: the other contains the latest novelties in silverware, jewelry, &c., which are so disposed as to invest each article with its proper worth. A solid background of dark plush is used.

D. Schroder & Co. have one large window where Eugene Frohman has a fine opportunity to show his skill in attracting the great throngs on that thoroughfare. His novel display of the latest and best that his house carries is often admired.

John Holland's fame as a pen manufacturer is as broad as the land. He found on his trip to the Pacific coast this summer, that the popularity of his pens had preceded him and he was accorded a remunerative welcome at every point. When it comes to novel displays, Mr. Holland can show everything in his line in all the latest styles produced. The desk can be fitted out with all the accessories needed.

Cincinnati jewelers are not only progressive, but liberal. Of the twenty jobbers and manufacturers here, every one subscribed handsomely to the big bazar to be held here next month. Of the towns, Piqua, takes the lead in magnificent donations. Of the twenty-seven manufacturers there, twenty-one have sent some of their products. If some show-case makers would donate some aquariums the fish are already on the string and they could be fitted up nicely. The Commissioners are very much gratified with the liberal responses.

Duhme & Co. have already their new designs in gold cases which are superior to any they have yet offered to the trade. The increased demand for them keeps the factory running its full capacity. The reports of the travelers give every assurance this year is to be the banner year of all preceding ones. In the manufacturing department of solid silver tableware the demand is the largest in the history of the house ; and the house is one of the oldest in these parts. They will continue to keep at the top by giving the best and the latest at popular prices.

Wadsworth & Co. are turning out some new designs in gold filled cases that are meeting the public favor. Mr. Wadsworth's long years in the business have given him thorough knowledge of the way a watch case is made. This is one of the sure causes of his rapid rise in the trade. Mr. Walton, their traveler, says, the demand is increasing for their late designs at such a ratio that he finds it difficult to satisfy them.



[From Our Special Correspondent.]

Chicago, October 20, 1890.

Prospects for trade at this time of the year were never better. Complaints were numerous from all quarters concerning the crop outlook, but now, at the general round-up, as it were, taking everything into consideration, there will no doubt be an excellent trade for the next two or three months at least. Our merchants all report trade fair, collections pretty good and no failures whatever.

Giles, Bro. & Co., 103 State street, the well-known manufacturing jewelers, wholesale and retail, have received their new catalogue from the printer, and it is "a beauty." Jewelers who are not already on the list should send in their business cards, with a request thereon, and they will receive something that no jeweler should be without. The catalogue will be sent postage free to any adddress.

The demand for the "Ackerman" ring clamp has reached that state that it is impossible to supply the demand with the present facilities; the useful little article was first illustrated in this journal shortly after the patent was allowed. Any of our readers desiring descriptive circulars should address J. L. Ackerman, Lowell, Indiana.

Your correspondent spent a day last week in the stone city of Illinois—Joliet, and was much impressed with the wide-awake place. Of course, the fact that the State penitentiary is here is a good cause for a lasting impression. My leave of absence, however, was shorter than that of many who go up to the stone city. Mr. Gus tapson and Mr. Anderson, of the Joliet Electric Clock Company, took me in charge, and showed me through their factory, and initiated me into the mysteries of their new electric clock.

The factory of the Joliet Clock Manufacturing Company was burned out some time ago, which caused the discontinuance of operations for some time. Meanwhile the company was reorganized and the board of directors reduced to some two or three, and Mr. Anderson, a stockholder in the original company, assumed the management of the new company.

The object of the company is to furnish jewelers, and all others desiring them, an outside post or bracket watch-sign, giving accurate time. Every sign is guaranteed to keep good time. A small primary battery furnishes the current, the mechanism of the outside clock being connected (very simply) with the regulator or store clock on the inside, by an ordinary insulated annunciator wire; consequently it needs no winding, and is not affected by the changes of temperature. The clock has two faces, and is perfect in every particular. The signs are being made in different sizes, and are adapted for a post or to hang from a bracket, as desired. The company will place the clock on a thirty day's trial with responsible parties, and if it is not perfectly satisfactory it can be returned at their expense.

Ann Harbor, Mich., October 15, 1890.

I have been a subscriber to The Circular from the beginning, and have all the numbers on file, and don't like to miss one.

Jacob Haller.

Onaiga, Ill., October 12, 1890.

Please keep on sending The Circular, as I look for it as I do for my meals.

Louis Ratzesberger.



Minneapolis, Minn., Oct. 13th, 1890.

What with retail selling at wholesale places, jewelry by the installment plan, jewelry clubs, etc., "legitimate" jewelers feel that they must look energetically after number one. For this end Minneapolis dealers of the craft have all united in a petition to the council to pass an ordinance raising the general peddler's license from $10 to $500, the object being to restrict such traffic, an alarming increase in the peddling of jewelry having already worked considerable injury to the local legitimate trade. The petition will probably be pigeonholed, as the members regard the majority of the city's present licenses too high. I think, too, that to grant the petition would discriminate unfairly in favor of peddlers who have already taken out their licenses.

At last J. M. Donelson, the Minneapolis jeweler, has justice done him. Several months ago he went to Butte, Montana, to open a store, and was there robbed of all his valuables. Both there and here his story was largely discredited, and he was thought to have robbed himself in spite of his repeated indignant denials. Now it transpires that a man named Salmon, who was suspicioned by Donelson from the first, has been found guilty upon two indictments, charging him with the theft as well as receiving stolen goods. Mr. Donelson feels accordingly good over the result, proving him innocent of such business dishonor.

Another trial just finished in Minneapolis is that of M. L. Jalonack, who is proprietor of one of those annoying auction jewelry stores. The charge is obtaining money under false pretenses, and is preferred by two men of Portage, Wis. Each states that Jalonack sold them a watch for $12, representing them to be worth $40. The watches turned out to be brass and practically useless Jalonack was found guilty, and fined $55.

Elliot, the jeweler, seems rather unfortunate. He lost something not long ago, and now the other evening a $200 diamond ring followed it. Two men looked over various goods and selecting one comparatively inexpensive ring, paying the clerk $5 as a starter for that and other articles which they would call for in the morning. While the clerk was laying the jewelry aside one of the men pocketed the $200 ring, and "never was seen more." Jewelers would seem to require as many eyes as a peacock, and a brain behind each, to "circumwent the wicious," as Sam Weller would say.

In Kansas City worthless checks, purporting to be signed by Hugo Oppenheimer, jeweler, were passed off on well known firms in a new and clever way. Each was for $60. A middle-aged man, hatless, coatless, with a pen over his ear, looking like a clerk from a neighboring office, rushed in, and would be greatly obliged, etc., as he was in an awful hurry. Of course the husband had not seen the swindler but many others have, and long for further sight of him.

W. F. Doll, of Winnipeg, wholesale jeweler, has dressed his windows rather oddly but attractively by filling them with wooden tubs, and the tubs with gold and silver watches.

A Coldwater, Mich, jeweler, L. G. Gregory, has constructed an engine and boiler so small as to be carried in one's vest-pocket. The fly-wheel is only one-fourth of an inch in diameter, while the piston has but one eighth of an inch stroke.

The well-known jewelry firm of Christopherson & Holth, of Menominee, Mich, has dissolved partnership, and is succeeded by Christopherson & Amundsen. The former partner came from Clinton, Ia., three years ago, and has built up a good business. Mr. Holth retires to go into business with a brother in Iowa. Mr. Amundsen was inspector of finished watches for eight years with the Illinois Watch Company, but learned his trade at Hamar, in Norway.

TRADE GOSSIP.

—Notice was last month sent out to the trade by Alois Kohn & Co., 11 Maiden Lane, New York, that S. Dirnfeld is no longer in their employ.

—Joseph Dueber, said to be backed by his father, John C. Dueber, will engage in the manufacture of jewelry in the latter's small factory building at Newport, Ky.

—On Oct. 1 the firm of Wittich & Kinsel, Columbus, Ga., was dissolved by mutual consent, A. Wittich retiring. Chas. W. Kinsel assumes all liabilities and continues the business under his own name.

—The factory of the R. Wallace & Sons' Mfg. Co. is running to its fullest capacity. The company, however, will govern their sales by their ability to produce, and are doing their utmost to take care of their customers.

—At the establishment of Charles Jacques, 2 Maiden Lane, New York, may be seen a new and very attractive line of real gilt top pieces for clocks. Mr. Jacques' stock of imported clocks, which is undoubtedly the most complete in the country, includes the finest selection of every variety of foreign make. These goods are especially adapted to the season, and no dealer visiting New York should fail to inspect them. Mr. Jacques carries a complete stock of material for these clocks, which proves a great convenience to those handling the goods.

—Since the E. N. Welch Mfg. Co. and the Boston Clock Co. have made Wm. H. Atwater their sole agent, and moved their salesrooms to the spacious store at 13 Maiden Lane, their business has been unusually good. The demand for their new goods and new styles has been unprecedented in the history of these companies. One of the latest novelties shown at the establishment is the "Little Grip," an exact counterpart of a small travelling bag, an exceedingly pretty and useful little clock. It is made with both bronze and gilt cases, fitted with a very fine timepiece.

—One of the most profitable lines now handled by the trade is Mexican onyx. Undoubtedly, the best productions in this beautiful material are from the works of S. Klaber & Co, 47 W. Forty second street, New York. This house make only the finest goods—goods that are handled by the highest class of dealers. Various styles of tables, rich cabinets, clocks, piano lamps, pedestals, with real bronze or gilt mountings, and all in graceful and beautiful shapes. All the work is original. The extremely low quality of many goods placed upon the market has wearied dealers and excited a demand for a superior grade. This Messrs. Klaber & Co are satisfying, and their line is especially adapted to the fine jewelry trade.

—The largest single purchase of cheap watches ever made in this country is that recently closed between S. F. Myers & Co., 48 and 50 Maiden Lane, New York, and the Trenton Watch Co., of Trenton, N. J. The transaction involves the purchase of 35,000 watches, cased and otherwise, which the firm has placed on the market at prices far below those of the manufacturers' original list. In a letter from F. McGowan, president of the Trenton Watch Co., he says: "We will commence immediately the shipment of the watches and movements, which cover all stock we have on hand as per our regular price lists of September, 1890. It includes all our gilt and nickel movements and those cased in nickel, silver and gold-filled cases. The movements are all the manufacture of the present year. They have hard enamel dials and are all in good order. We guarantee them to be such, the sole reason for disposing of them so low is simply to clean our factory of all the stock on hand, enabling us to proceed with the contemplated alterations, etc. Of course, as offered, if you wish us to store any of the watches and movements here in our vaults for a short time for your account, we will do so with pleasure, but we are to render invoices immediately, and you are to pay for the goods cash, that being the understanding. The quantities and kinds of watches are as per the inclosed memorandum, and which we believe to be the largest sale of seven jewel watches ever made on this continent. In our opinion you have made a most excellent deal, as you have now absolutely the control of the cheapest open-faced American movements in the market." S. F. Myers & Co. will send, on request, their special Trenton circular with full list of movements and cases. The prices being reduced fully 25% below any other American watch, dealers will study their own interests in sending for the same.

—The L. A. Cuppia Mfg. Co. have purchased the stock and plant of the late firm of L. A. Cuppia, and are now conducting the old establishment under the above title. Cæsar A. Cuppia is manager.

—H. M. Smith & Co., manufacturers of gold pens, 83 Nassau street, New York, are doing an unusually large business in fountain pens, gold pens and other specialties carried by them. The several salesmen of the firm are each taking good sized and many orders, and every mail brings fresh demands.

—M. H. Kling, of 11 John street (Corbin Building), New York, will in future devote his attention to the importation of diamonds and precious stones. His stock of mounted goods is very fine, and particularly adapted to the holiday trade, being in all the new and prevailing styles of rich diamond jewelry.

—On Nov. 1 Henry E. Ziplinsky and James Bourquin, of Columbus, O., will open a jewelry business at 108 N. High place, that city. These gentlemen were recently with the well known establishment of Simons Bros., and one being a thoroughly practical man, while the other possesses considerable business ability, a successful business career for the gentlemen can be anticipated.

—The opening of the new store of Montgomery Bros., Los Angeles, Cal., on Oct. 11, discovered one of the finest jewelry emporiums in the United States. The stock is undoubtedly the most extensive one shown in that city; it consists of watches, fine mounted goods, solid silver, Gorham ware especially, silver plated ware, the choicest patterns of Seth Thomas, Ansonia and E. N. Welch clocks, jewelry, opera glasses, spectacles, eyeglasses, etc., gold pens and pencils, gold and silver head canes and other fine lines. This magnificent establishment is the fruit of nine years' enterprise, integrity and fair dealing, and the CIRCULAR extends to the proprietors its hopes for the further success they deserve.

—The 1891 catalogue, just issued by the Middletown Plate Co, is a magnificent affair; three hundred large pages, bound in a heavy red and gold leatherette cover. It is both voluminous and handsome. It is the largest volume of its kind, we think, the company have ever issued, a natural circumstance, as their assortment of superior silver plated ware is more complete than ever before, and they are constantly adding to it in staple and fancy lines. In hollow ware about 135 different lines are illustrated, while several pages are devoted to illustrations and descriptions of flatware (Rogers & Bro.) in all its various makes—tea spoons, table and dessert spoons, forks, butter knives, sugar shells, pie knives, berry spoons, coffee spoons, oyster forks, childrens' sets, oyster ladles, cake knives, ice-cream knives, steamers, etc. Prominent features of the volume are the numerous patterns of tea and coffee sets, in plain satin or burnished, embossed, satin bright cut and chased styles of decoration. It may be too lengthy a work to specify all the lines shown, suffice it to say that samples of everything made in silver plated ware are displayed, among which may be seen numerous new designs attractive and salable. This catalogue should be in the hands of every dealer in the country. The matter is printed on fine super calendered paper, showing the goods to advantage, the prices are quoted and the lines are indexed. It will cheerfully be forwarded to any reader upon application to the factory at Middletown, Conn.

—The new catalogue of the Waterbury Clock Co. seems to us more voluminous than previous ones, consisting as it does of about 170 good-sized pages. In these pages are illustrated and described some of the most popular novelties produced this year, among which may be specified the "Jumbo," a clock representing a watch, and though somewhat larger than the watches now in use, hardly larger than those our grandfathers carried; the "Mite," the "Paper Weight," a clock and paper weight combined, the face being horizontal instead of vertical; the "Prod," the "Dwarf," the "Obelisk," the "Patsy," a typical Irishman with the clock hanging from his shillalah, the "Sailor," the clock being set in a coil of line held by a sailor; the "Pilot," the clock being set in the center of the wheel; the "Sire," a 11⅝ inch bronze clock in grandfather shape case, and numerous other unique and attractive patterns. Besides these are shown a large line of clocks in imported onyx and marble cases, an extensive assortment of clocks in cases of enameled iron, polished oak, mahogany, walnut, blackwood, oak, ash and polished veneer; also spring and mantel clocks, and metal, plush and wood-cased lever clocks, as well as regulators, calendar clocks and bronze figures. The attractive novelty which the company display in their advertisement in another portion of this issue is called the "Study"; it is made in oak or cherry, and has glass sides and silver dial. It has a chair-weight movement, and the bell at the top strikes resonantly every hour. Altogether it is a very handsome design and will undoubtedly have a good sale.

—The Crescent Watch Case Company is making a 10-karat gold-filled watch-case, called "The Planet."

—We regret to announce the death at Richmond Springs, N. Y., on October 19th, of Mrs. Sarah D. White, widow of the late George C. White, of Rogers & Brother, and mother of George C. White, now of that house. The funeral services occurred at her late residence in Brooklyn on the 21st, the interment being at Woodbury, Conn.

—Last month the suit brought by Wm. Bourke, New York, against Howard & Son, Providence, to test whether there had been any infringement of patent in the manufacture of the latter's celebrated American lever button was decided by Judge Wallace, in the United States Circuit Court. The decision is that Howard & Son's button does not infringe on Mr. Bourke's patent.

—The Chicago Watch Tool Co., 50–52 Madison street, Chicago Ill., have just issued a new catalogue which will gladly be forwarded to any dealer upon application. The volume displays the entire line of goods the company make—watch-racks, engraving blocks, screw-drivers, staking-tools, foot-wheels, chuck-stands, polishing-lathes, countershafts, tweezers, rolling-mills, ingot-moulds, and watch and spectacle signs. Of the latter specialty the work gives several patterns, and some particularly valuable information. The company, which was recently incorporated, have increased their facilities, and will endeavor to maintain the reputation the house has held for a number of years.

—From a number of circulars issued to the trade by Lapp & Flershem, Chicago, Ill., we notice that this house has numerous new lines to offer, prominent among which are silver-plate novelties in flat-ware, picture-frames, watch-stands, ash-trays, card-cases, etc.; also gold-pens, pencils, tooth-picks, etc., besides bangle friendship rings—new and popular articles of jewelry. The firm are offering at reduced prices an entire discontinued stock of Columbus movements, consisting of Nos. 22 and 92, nickel, 11 jewel, patent regulator, and also Nos. 33 and 94, nickel, 15 jewel, patent regulator; also a stock of the new Howard watches in Crown 14-karat gold-filled cases. A little slip accompanying the circulars gives corrected prices for September, 1890, for silver cases—Fahys patent cases, Waltham Company's silver cases, and Howard silver cases. A novelty which the house is handling and which should have a good sale, is an electric alarm clock.

—The 1890–91 catalogue of Jacot & Son is now ready for distribution. It is a handsome affair, consisting of 48 pages of super-calendered paper, bound in pretty covers. The book is profusely illustrated, and the reading matter is well arranged and clearly set. Altogether it is a very readable volume. Especial attention is solicited to the new models of music-boxes, which possess the following advantageous characteristics—they are less liable than the old style to get out of order, they possess coupled main-springs (which allows them to run twice the old time with one winding), time indicator, time skipper, moderator, and all the latest improvements, the cylinders are of a larger diameter than the old styles, giving longer tunes and better tones. In casing these instruments the greatest taste has been displayed, and in the general appearance the boxes are as handsome as it is possible to conceive. The sweetness and beauty of the tone and expression of the Jacot musical-boxes has been known to the public for years. It is safe to say that, in this respect, these boxes are unsurpassed. This house is sole agent for the Mermod Frères, one of the largest music-box concerns in the world, as well as among the oldest, having been established in 1840. The factory facilities of the latter firm being all that is necessary, the plant being commodious and fitted with fine American machinery, insuring uniformity in the quality of the productions, enables Jacot & Son to supply the finest goods at the lowest possible prices. The catalogue contains numerous illustrations in the way of musical novelties, which every jeweler should handle, as they are not only very salable, but make attractive features in show-windows. Jewelers who have not yet received a copy of the catalogue should apply at once for one. The business of this house, though always voluminous, has considerably increased since the removal from 37 Maiden Lane to 298 Broadway. The show-window of the establishment is one of the features of the city; perhaps there is not a down-town business-man who has not been attracted to it by its beauty and originality of design, and a crowd is ever gaping before it The fancy-dressed figures within, in national costume, equipped with numerous musical instruments, capable of playing tunes, excite much interest.

—The Meriden Britannia Co. will shortly occupy the old factory of Hall & Elton, in Wallingford, Conn.

—J. M. Rutherford, "The Jewelers Auctioneer," 618 Chestnut street, Philadelphia, has just completed a successful auction for A. H. Simons, 314 Jackson street, Minneapolis, Minn.

—With the increased facilities afforded by their new factory in Gold street, M. B. Bryant & Co., the well-known ringmakers, of 10 Maiden Lane, are able to fill all orders for their popular "Bryant" initial ring, as well as their large line of fancy rings. within twenty-four to forty-eight hours after the receipt of the same.

—The Brown & Sharpe Mfg. Co , Providence, R. I., have just issued a very interesting pamphlet on emery wheels, with complete information on their selection and use. The book contains also a list of those wheels ordinarily the most serviceable on the grinding machines made by the company A copy of their publication will be mailed, upon request, to any address.

—On Oct. 16, L. A. Piaget & Co., Paterson, N. J , opened their new store at 238 Main street, which is perhaps the finest and most complete establishment of its kind in the State. After a business career of twenty-five years, the gentlemen composing the house, Louis A. Piaget, S. M. Schoonmaker, and Frank A. Piaget, may look with pride upon the fruits of their labors, and their many friends wish them continued success.

—Wood & Hughes, silversmiths, of 16 John street, New York, have a new line of repoussé goods in bread-trays, bread-plates, berry-bowls, cups and shaving-cups, etc., and new patterns in napkin-rings, toilet goods and ink-stands, which are very beautiful and captivating. They have also a full line of spoon work. The coming pattern, the "Luxembourg," is shown in a few fancy pieces, but will hardly be ready this season in straight work. The trade should give their orders early, as this season promises to be a busy one for silversmiths.

—The remarkable success of the Sumatra gem, solely imported by Albert Lorsch & Co., 37 Maiden Lane, New York, has undoubtedly been unprecedented in the history of the class of goods to which it belongs. The demand this season exceeds the ability to supply, so dealers will understand it to be to their interests to send in their orders as soon as possible. When we remember the qualities of the stone, this success is not to be marvelled at. It is cut like a diamond, and it is the closest imitation of the real brilliant that has yet come to our notice, possessing its fire and prismatic colors. Leading manufacturers are mounting them in fine settings.

—One of the most efficacious agents in the market for cleaning and polishing gold, silver, plated-ware, and other metallic surfaces, mirrors and plate glass, is coral cream polishing fluid, manufactured by the Coral Cream Co., of Yonkers, N. Y. It is warranted chemically pure and free from mercury, acid, alkali, ammonia, grit, cyanide of potassium, and every other injurious or poisonous substance, and not to wear the finest surfaces, hands or clothing. An American Institute diploma, and numerous testimonials are evidence of its admirable qualities. The attention of the reader is directed to the Coral Cream Co.'s card, elsewhere in this issue.

—The Plainville Stock Co., Plainville, Mass., are rushed to supply orders on their fall line of gold front and high grade white stone brocches, pins, scarf-pins, etc. They report an especialy large run on brooches set with platinum-tipped brilliants, the finest white stone goods in the market, and also on their brooches of solid gold set with the same brilliants. In gold front brooches their usual selection has been augmented by the addition of many new patterns, while in scarf-pins set with rosalines, brilliants, or moonstones, they show no end of styles. A new line with them that is finding much favor is the rhinestone necklace, with pendants of all popular designs. They note a tendency to better quality and higher prices in plated goods.

—Attention is directed to the advertisement of the Berlin demagnetizer, which is daily coming to be considered an indispensible adjunct of a watchmaker's outfit. A full description of this device appears under the "World of Invention" in this issue. The following testimonial speaks for itself:

New York, July 11th, 1889.

Berlin Demagnetizer Co.:

Gentlemen—We are pleased to express our satisfaction with the Demagnetizing Machine purchased from you. It does the work for which it is intended in a *thorough manner*, and *we can recommend it* to jewelers who have occasion to demagnetize watches. Yours very respectfully,

THE E. HOWARD WATCH & CLOCK CO.

E. V. Clergue, agent.

—The Pairpoint Mfg. Co., New Bedford, Mass., offer an unusually large line of novelties for the holiday trade such as tooth pick holders, pin cushions, pen stabs and mucilage bottles, all fresh and unique in design and popular in price.

—Ferdinand Fuchs & Bros., silversmiths, 808 and 810 Greenwich street, New York, have now got their new factory in running order with a full force of hands. Their traveler, Mr. Sideman, has just returned from an extended trip through the West, and reports the demand for sterling silver goods as being very satisfactory.

—Simpson, Hall, Miller & Co. are as crowded with orders in their factories as their stores in New York, Chicago and Montreal are crowded with customers. Their new fall styles are very attractive and pleasing, particularly noticeable among them is the silver embossed tea service of ten pieces, illustrated on another page of this issue, a very rich and costly pattern. The Wm. Rogers brand of flat ware, which they manufacture under the personal supervision of Wm. Rogers, is too well and favorably known to need comment.

—S. F. Myers & Co. have issued and are distributing their handsome catalogue for 1891. In accordance with the progressive spirit of the times, and the firm's position as one of the leaders in the trade, they have aimed to enhance the practical value, and improve the general appearance of the book, and have embellished its pages with all that is new and interesting to the jeweler. The selections illustrated are the choicest and most desirable goods representing the 22 departments into which the stock of the house is divided, embracing everything that pertains to the trade. Prices as usual are quoted at long or list figures, the discounts to the same, as is customary with the firm, being mailed in sealed envelopes to those who receive the book. The firm have assumed the leadership in the trade from the fact that they are recognized as the makers of prices on reliable goods, quotations in their publication being the standard to close buyers, as they should be. Their margins of profits are not confined to any particular line, but being based on a minimum of expense through their amalgamating the various branches of the manufacturing and wholesale jewelers lines. The splendid book in itself requires no particular notice beyond saying that it is an improvement in every way on any of their former handsome productions. Those in the trade who have not received a copy should at once address the firm at No. 48 and No. 50 Maiden Lane, New York, for the same, as it cannot fail to be instructive and of value to every jeweler in the land.

—Each several line of the stock of Cross & Beguelin, 21 Maiden Lane, New York, has been repleted for the season, the assortment of jewelry being especially attractive and new.

—Taylor & Brother, 860 Broadway, New York, have a branch office at 1½ Maiden Lane, in the store of Jno E. Shepard, where they display a line of all their best styles of clocks. This move is taken for the convenience of their down town trade, and especially for the convenience of the out-of-town trade visiting New York to purchase their fall goods. The stock consists of everything in the line of fine English and French clocks. The styles of the goods are the most select to be found in the European markets, and the prices are the lowest consistent with the excellence of the wares.

—Levy, Dreyfus & Co., the well-known importers of tools, materials and optical goods, 11 Maiden Lane, show a very large and varied line of silver mounted and aluminium opera glasses of the finest make. They claim to be the largest importers in the trade of goods designed especially for the fine optician trade. In the line of the now popular opera glass holder, they offer a very strong and neat style of holder, closing up perfectly, and so constructed that it will not scratch the smoothest surface. The extensive assortments of onyx clocks, bisques and bronzes, which they imported this season, have proved most acceptable to the trade, this now constituting one of their busiest departments.

—One of the most reliable refining and assaying firms in the country is Goldsmith Bros., 63 and 65 Washington street, Chicago, Ill. This concern make a specialty of buying old gold, silver, plated scraps, sweeps, filings, etc. It appears that the principal requirements of such a house are that their prices should be the maximum and that they should remit the amount immediately upon the receipt of the metals. That in these particulars Goldsmith Bros. give general satisfaction is evidenced by the numerous expressions received by them from dealers all over the country. If their separation or estimate of value should not prove satisfactory, which is seldom the case, they will return the shipments in exactly the same condition as when received, paying all charges for doing so. Jewelers should bear these facts in mind, and make note of the address of the firm we are talking about. A useful little pamphlet on preparing acids, and containing pointers on testing and buying gold, etc., will be mailed by the Messrs. Goldsmith to any dealer upon application. The advantages of sending old metal to this house are set forth in their announcement on another page.

IT IS THOROUGHLY WROUGHT FROM A SOLID BAR OF GOLD.

THE

BOWDEN SEAMLESS RING.

EXAMINE IT.

J. B. BOWDEN & CO.,

CORNER BROADWAY AND JOHN STREET, NEW YORK.

Wymble Man'f'g Company,



SILVERSMITHS.

ELECTRO DEPOSITION,

WITH SILVER IN ALL ITS PROCESSES.

CHASED AND FLAT EFFECTS ON CLARET PITCHERS, DECANTERS, KIRAFFES, PERFUME AND TOILET BOTTLES, CANE AND UMBRELLA HEADS AND NUMEROUS OTHER ARTICLES.

FACTORY: N. W. COR. CHESTNUT AND MULBERRY STS., NEWARK, N. J.

—F. M. Whiting & Co., North Attleboro, Mass., have added to their line this fall a very handsome assortment of tete-a-tete sets finished in the popular engraved, chased and etched styles. These goods are novel in conception and perfect in finish, and have prompted a liberal response of orders from the trade. In their line of small wares they are keeping in close touch with the trade.

—Though still in its first year the house of Weis & Oppenheimer, 192 Broadway (Corbin Building), New York, has been so successful that night work, to speak epigrammatically, is the order of the day with them. This activity is partly due to the fine execution and artistic designs displayed in the manufacture of their gold watch-cases. Their new 14 karat case has been especially successful, and has won the approbation of the trade.

—One of the handsomest designs in flatware which it has been our pleasure to examine is the new "Tuxedo," just placed upon the market by Rogers & Brother, 16 Cortlandt street, New York, and illustrated on another page of this issue. As far as our knowledge extends, it is the most silvery spoon ever made. The details of the handsome design, which is the same on the reverse as on the obverse side, are well defined, and all together the "Tuxedo" is one of the richest patterns we have ever seen. Another attractive pattern that Messrs. Rogers have recently introduced is the "Belle," hand engraved and satin finished. All the details of the design are brought up by hand work after the article is plated.

—John B. Yates, of 191 Broadway, New York, jobber of American watches, has found it necessary to open more commodious and conveniently situated offices at 147 Nassau street. He retains the former office until the expiration of the existing lease, May 1, 1891. Mr. Yates, during the short period he has been in business for himself, has built up a large connection, and this new move will enable him to successfully handle his increasing trade. He carries in stock a large assortment of American watches, and makes a specialty of supplying dealers with discontinued movements. Mr. Yates has for some time past been accumulating a large stock of the latter goods, and can furnish any movement desired.

—E. W. Laurencot, son of the late J. B. Laurencot, arrived in New York a few days ago on a short visit. Our readers will understand that the large importing business at 33 Maiden Lane, New York, will continue to be vigorously prosecuted under the same efficient management that constituted the staff of the late J. B. Laurencot. The travelers, Jules Laurencot and William Moore are booming business on the road, whilst E. J. Brearton still manages the home business. E. W. Laurencot will see that the American house shall be earliest supplied with all the optical novelties to be found among the manufacturers in the French capital, as well as with all standard goods from the other European manufacturers. Dealers buying for the holidays should not fail to look in at 33 Maiden Lane.

—J. F. Fradley & Co., silversmiths, 23 John street, New York, are displaying a large line of very richly chased hollow ware, such as pitchers, berry dishes, compots, sugars and creams, tea caddies, etc., as well as a variety of smaller wares, including butter dishes, salvers, peppers and salts, napkin rings, tea balls and strainers, bon bon dishes, trays, etc. These latest additions to their line have proved very salable and they are running day and night to fill orders. Other specialties of this house that are in demand are the silver-mounted opera glass bag illustrated recently in the *Circular*, and their new line of silver-mounted powder puffs. While producing all these novelties they still keep abreast of the times in their well-known staples:—cane and umbrella mounts, opera glasses, match boxes, in both gold and silver, some of the gold ones being inlaid with precious stones.

—The article upon which the Craighead & Kintz Co., of 33 Barclay street, New York, are laying particular stress in this issue of the CIRCULAR is the "Daylight Lamp." Already the name of this lamp is well known to the readers of the standard publications throughout the country by reason of the quite extensive advertising which it has received. The "Daylight Lamp" is not as inappropriately named as such things frequently are, for, as any one may prove to his entire satisfaction, it gives a steady, clear and white light. So much for the fact that it bears out its name. Very little trouble is this admirable lamp. In fact, all you have to do is to just keep it well filled and let it burn; not even bothering to wipe off the wick; for when it is so charred that it does not burn clear, you may rest assured that the impurities in the oil have clogged the wick below the burning point, so as to make a new wick necessary for that reason as well as for the char. Their wick raiser is a triumph. Their specially patented wheel and jacket can better be seen than described. But it works, depend upon it, every time. It doesn't stick.

—It will be seen by a reference to our advertising columns that Messrs. Julien Gallet & Co., so long known to the trade as one of the largest watch importing houses, have made a change in the American branch of the firm. They will be succeeded here by Messrs. Jules Racine & Co., at the old stand, No. 1 Maiden Lane. Mr. Racine is the grandson of Julien Gallet, the founder of the house, and Mr. Charles Perret, the other partner, has been connected with the house for many years, and both are well and favorably known to the trade throughout the United States.

—In complicated watches, Mathey Bros., Mathez & Co., 16 Maiden Lane, New York, can justly claim to have the best and most complete stock in the country. New styles and sizes are continually being added to this stock, the aim of the house being to please all customers. The new five minute repeater, dubbed the blind man's watch because of its cheapness, which they have just placed upon the market, has already proved successful It is furnished with either gold or silver, open face or hunting cases, and the repeating mechanism is much more simple than in the older makes. Dealers should send for this watch.

—"Button, button, who has the button?" is a question that has been going the rounds in the trade these many years. J. T. Scott & Co., 4 Maiden Lane, think they are in a position to answer this much mooted question at last, and anyone who looks over their stock of "Anti Swear" sleeve buttons must admit that there is very strong ground for the assertion. In patterns their name is legion of all conceivable shapes and styles known to the trade. Messrs. Scott & Co. report a steady and increasing demand for these buttons, and that they gaining in favor as they become better known.

—Berlin & Scott, 106 and 108 Liberty street, New York, have built up a well-paying business in quite new lines. A few months ago, they opened a completely equipped shop for the operation of the higher branches of watch manufacture, making a specialty of damaskeening or fancy jeweling and jewel making. Mr. Berlin is one of the best damaskeeners in the country, having been for several years till recently foreman of the demaskeening department of the American Watch factory at Waltham. The trade, when desiring any work performed such as the above, besides plating on watch movements, would do well to remember this firm's name and address.

—The Alvin Mfg Co., 24 Boudinot Street, Newark, N. J., and 860 Broadway, manufacturers of the popular silver deposit wares, have found it necessa y to nearly double their facilities this fall to keep pace with the increased orders that are flowing in upon them. Their latest triumph in silver deposit work, a heavy, rich bas relief ornamentation on crystal glass in the form of vines and tracery, beautifully engraved, has opened the eyes of the silversmithing trade and the purchasing public generally. Nothing more rich and handsome in this line has been seen in years, and the run on these goods is quite phenomenal. In canes, umbrella heads, stationery novelties and toilet wares, they display a line that cannot be duplicated, every article being characterized by the rare taste and skillful manipulation of metal, that have been largely instrumental in giving this firm the unique position they occupy in the trade to-day.

—Maiden Lane received a violent shock on Tuesday, the 28th, when the news spread that D. H. Wickham & Co., diamond importers, of 24 Maiden Lane, had assigned. The house is one of the oldest in the line, and can point to an honorable career of over forty years. The liabilities are roughly estimated at about $250,000, and the assets at about $100,000. The causes of the failure are said to be heavy losses, the failing health of the senior member of the firm who is now verging toward four score, and the sharpness of competition. Preference was given to the banking house of Munroe & Co., of New York, for a sum not stated for an open account in foreign exchange of from $20,000 to $25,000. Many expressions of sympathy were heard from the older members of the trade who had known the senior member through a long unblemished career. Shortly after the failure a number of the largest creditors, including E. Aug. Neresheimer & Co., Henry Dreyfus & Co., Heilbronn & Blank, L. Tannenbaum & Co., J. Wertheimber and Maurice Weil, swore out writs of attachment against the firm's assets, on the ground that while representing themselves to be doing a profitable business, and still continuing to buy goods in the open market on the strength of these statements, the firm were pawning or hypothecating goods. The attachments were granted on the 29th inst. The assignee states in explanation, however, that on one occasion only did they do this, to meet a large payment, and that the goods were afterwards redeemed by one of their creditors at their full value, the balance after deducting the amount of his claim, being handed over to D. H. Wickham & Co. The creditor who did this friendly office, it is said, signed the affidavit in the attachment writ without being aware of its full import, and, of course cannot be charged with any criminal intent inasmuch as he paid full value for the goods. The matter is in the hands of the attorneys, and will probably be settled satisfactorily in a short time.

—The retail jeweler, in making up his stock for the holiday business, cannot hardly find better selling articles than the "O & Z" interchangeable initial rings, lockets and sleeve buttons. Odenheimer & Zimmern, 46 Maiden Lane, New York, are the manufacturers of these excellent goods.

—Louis Fox, of M. Fox & Co., importers and cutters of precious and semi-precious stones, 1 Maiden Lane, New York, arrived from his European buying trip on Oct. 19. He brought with him an unusually large and handsome assortment of new goods, comprising diamonds and fine colored stones, besides the better varieties of semi-precious stones.

—The attention of the trade is called to the Swiss watch importing firm of A. Wittnauer, 30 Maiden Lane, New York, where dealers can find a most complete stock of desirable styles very suitable for the holiday trade. We advise every dealer visiting the metropolis to call at 30 Maiden Lane to examine the goods of the famous Longines and Agassiz make, besides a general line of Swiss watches.

—The Wymble Manufacturing Co., corner Chestnut and Mulberry streets, Newark, N. J , have recently fitted up for the manufacture of the popular electro deposit ware in decanters, pitchers, claret jugs, kiraffes, and water bottles. Their work in this difficult branch of silversmithing is pronounced of the very first order and merit by those who have seen it, and a rapid increase of business has obliged the new concern to enlarge their quarters once already. In design their productions show novelty and originality, and in finish they are faultless. Most of the relief work that has hitherto beed placed on the market is engraved, but the Wymble Co. have accomplished the feat of chasing the glass without injury to it—a difficult feat they claim. Their trade mark recently adopted, is illustrated on another page.

—The Spencer Optical Mfg. Co., are showing a larger variety of designs of opera glass holders, and doing a larger business in this line than ever before. The popularity of the Spencer holder is remarkable but not at all surprising when considering its merits. In changing devices, simplicity, beauty of design and "grip," it cannot be surpassed. The Spencer company are sole agents for the "Audemair" opera, field and marine glasses, the name of which has become synonymous with superior excellence in this line. The designs they are importing for the first time are especially noticeable. The trade should send for "special" on opera glass holders, the new catalogue of opera glasses, the 100 page catalogue of optical goods manufactured by this company, circulars of new eyeglasses, ophthalmoscopes, and other publications. "Visual Defects and their Correction" has just come from press. This little book was prepared especially for opticians.

—The maxim, the latest is the best, is not the only ground upon which to base the assertion that the new patented lever back interchangeable initial ring just introduced by the manufacturers of the celebrated "Princess" initial rings, is the best device yet produced in this line. By an examination of its construction and the appreciation of its sterling merits, one will be at fault to conceive anything more simple and perfect. The only tool necessary in inserting and removing the stone is an ordinary jewelers' screw-driver. By placing the tool in a small slot in the shank and turning the lever till the slot is parallel with the shank, the stone can readily be removed with the thumb and finger. The same operation restores it in place. The most unpracticed hand can perform the operation. This interchangeable feature is but for the slot totally invisible, and the slot is behind the front of the shank. The ring thus appears inseparable to the vision. All the stones in these goods fit the boxes of the rings, and thus save dealers the necessity of ordering new shanks when the initial is not adapted to the customer. The ring is made in all the weights, medium, heavy and extra heavy, and each day sees produced new shapes and new styles. The same excellence of design and workmanship as characterize the older famous "Princess" are displayed in the manufacture of this new "Princess," which is covered by both trade mark and construction patents. Though but just introduced, numerous heavy orders have been placed for them, and many of the largest jobbers in the country are sending out special circulars announcing them as among the best things in the market in any line. The manufacturers, of course, still continue to made the older patented initial rings, which are known and appreciated by every dealer in this broad land. This house also make a complete and beautiful line of Knights Templar, Knights of Pythias and Elks charms, with real onyx instead of enamel. They do not consign a dollar's worth of goods; everything is sold outright.

—Aikin, Lambert & Co., 23 Maiden Lane, the well-known gold pen and novelty manufacturers, are working hard to keep up with orders, especially in their pen department. They put value and quality into all their pens, and the jeweler who handles them has no trouble in getting profit out of them.

—H. M. Davis & Co., 61 Nassau street, New York, are among the most reliable and prompt watch case repairers in the country. They make a specialty of engine turning, springing, polishing, beveling, jointing, bowing, crowning and general repairing, and pay particular attention to out-of-town patronage.

—Hamilton & Hamilton, Jr., the well-known rolled-plate chain manufacturers, of 7 Eddy street, Providence, R. I., have a unique offer in our advertising pages this month. They will pay $1,000 to any one who will prove that they ever consign goods or let them out to be returned at the end of the season. The demand for their popular brands of chain is steadily and surely growing, because of the sterling merit of the goods and the thorough business-like policy of the house. Messrs. Hamilton & Hamilton, Jr., do not consign goods. They do not have to. They have no difficulty in selling all they can make.

—The Julius King Optical Co., 4 Maiden Lane, New York, now offer to the trade a line of opera-glasses equal in variety and quality to any in the market, and at prices as low as any. Opera glass holders are still the go and in these they lead the market, with a line comprising all the popular styles and varieties of mountings—pearl, silver, shell, etc. They report such a rushing demand for these goods that they cannot turn them out fast enough. Dealers who need anything in the way of gold specs, or eye-glasses, will consult their own interests by placing orders at once, as scores are already ahead of them eager to be served. Their King "Elite" test case is now an accepted standard among the trade.

—Never before in their history have The Derby Silver Co., Birmingham, Conn., been so busy as they are at present. They are literally flooded with orders and could use several hundred more silverworkers if it were possible to obtain them. Dealers who are familiar with the artistic novelties The Derby have been producing for the fall trade (and what dealer is not?) will hardly be surprised at the news, for The Derby's line of novelties has scarcely a superior in point of novelty of design, finish and wearing qualities. The base of their ware is a hard white metal, the composition of which is a secret held by the company alone, and of such a nature that it takes a much finer polish than the softer metal generally used. This advantage is appreciated by purchasers of the Derby goods, and the consequence is the present glut of orders.

—The following unsolicited testimonial received from John T. Bond & Co., Kingston, N. Y., by R. & L. Friedlander, 65 Nassau street, New York, conveys an idea of the general estimation in which their "Monarch" mainspring is held by the trade: "I am much pleased with the Monarch mainsprings you sent me some time ago. I have used thirteen; not one has broken up to date. During the same time I have used twenty-seven * * * springs to fifteen watches, which is more than a joke. I wrote two months ago to the company about the bad quality of the springs. They kindly sent me six dozen, with a hope that they would please and a request that I would report, which I do to-day by the same post that takes this. I think the result is not pleasant. First, there is loss of time; second, which is far worse, the vexation to customers." An announcement of these excellent articles is made on another page.

—McCarty & Co., "purveyors to the jewelry trade," 525 Broadway, New York, are opening continually importations of European novelties particularly adapted to the needs of the jewelry trade. The members of this firm have a long experience and unerring taste to guide them in the selection of goods of this class, and in glancing over their stock even the casual observer must be struck with the high order of merit of their selections. Here are to be found specialties not to be seen elsewhere, and specialties that will prove profitable additions to the jeweler's stock. One of their most recent acquisitions is a line of plush boxes overlaid with silver in imitation of the pierced metal work of the middle ages. Of these handsome goods they are the sole agents. Jewelers in New York for holiday purchasing should not fail to give McCarty & Co. a call. Those who do not visit the metropolis should write for particulars concerning their $100.00 case of assorted specialties, including Royal Worcester and other leading makes of English and continental pottery, together with choice pieces in bronze, bisque, etc., all varied and arranged to suit the wants of each purchaser.

—As the holiday season approaches jewelers ought to begin to think about special advertising in local papers and through other mediums. To have the best effect, this must be done in a striking and original manner. The Pictorial League, *Tribune* building, New York, make a business of getting up odd and attractive advertisements for tradesmen of all kinds, and jewelers will do well to correspond with them.

—Queen & Co., the opticians, of 924 Chestnut street, Philadelphia, have just issued a handsome lithographic map of the eye, which they claim is the only accurately-colored map having descriptive text to be obtained. It is about 23x28 inches in size, and the illustrations are large enough to afford a perfect view of the entire mechanism and structure of the eye. A more appropriate wall-piece for an optician or optician-jeweler could not be devised. Queen & Co. solicit correspondence from the trade regarding it.

—L. Straus & Sons, importers of pottery and bric-a-brac, 42–48 Warren street, New York, offer this season an unrivalled assortment of French, German and English ceramics in the most novel and pleasing patterns. Their mammoth assortment has been supplemented by over 150 different models in Carrara and Castellani marbles, and large importations of onyx clocks, English hall clocks, and real bronze mounted vases, especially for the jewelry trade.

—The factories of the New Jersey Lamp and Bronze Works, New Brunswick, N. J., are driven to their fullest capacity to supply the extraordinary demand for their salable line of lamps, bronzes, and ornamental metal goods. Their assortment of bronzes comprises a fine selection of copies of the choicest French models, as well as a considerable number of original conceptions quite equal to the best of foreign make. In colored lamps the variety of styles exhibited is large enough to meet the requirements of every purchaser. Fancy metal work in the form of onyx tables, table lamps, and banquet lamps are shown in all the popular finishes. Their New York showrooms are at 91 Duane street, where a complete line of samples can be seen. Catalogues will be mailed to dealers on application.

—One of the best devices connected with the manufacture of watch cases ever placed upon the market is the 18 size, 14 karat case with patent dust band, just produced by the Brooklyn Watch Case Co. This case has been devised with the object of reducing to a minimum the likelihood of injury to the movement from shocks to the watch received in shipment or in taking it from the pocket in and letting it strike against a body, besides to be dust proof. That this object is attained with success may easily be appreciated by an examination of the case. The back and center are of one piece and solid. In this respect alone, the case in our opinion is superior to the old screw bezel and back, as by the solidity, the liability of affection by dust is much reduced. The hinged dust band forms an inner case fitting flushly and securely into the back and center. By this construction, the movement may readily be inserted, and owing to the rigidity, the movement is much better protected than in the old style from concussion and kindred accidents in shipping and use. Altogether this novelty is about as perfect as it is possible to conceive, and we feel certain that it will achieve much success. It is made in 14 karat only, and weighs 37 dwts.

—Among the handsomest and most attractive clocks produced this season is the "India," manufactured by the F. Kroeber Clock Co. The illustration appearing elsewhere in this issue scarcely does justice to its beauty, though the unique and graceful lines of the case are evident. The "India" is an eight-day clock, with one-half hour strike and cathedral gong. It stands exactly fourteen inches high, the body being of japanned iron, while the ornamentation is of silvered bronze. The dials are assorted, being white or gilt. An especial feature respecting this article is its almost impossible low price, which places it within the reach of all dealers, however small, and guarantees its sale to the public. The demand for these clocks has been and is greatly in excess to the capability to supply. Of Mexican onyx clocks, with American and French movements, the Kroeber Co. claim, and statistics show, that they carry a larger stock than any house in America. But is impossible here to specify the lines which are offered for the season; suffice to say that every inch of available space of their spacious store is crowded with new goods, prominent among which is a line of fine and unique bric-a-brac specially and personally selected for the jewelry trade. As the new tariff schedule shows, the rate of duty on porcelain clocks and wares has been increased from 30 to 60%, making the actual extra cost of 22%; in onyx clocks the increase is from 30% to 50%, or actual extra cost 15%. This company, however, for a short time—perhaps as far as the end of the year—will charge but 10% throughout.

—E. C. Ostby, of Ostby & Barton, has just returned from the northern part of Maine, where he spent a week deer hunting and brought back with him a fine buck weighing 220 pounds, which was cut up and distributed among his friends.

—It seems necessary to deal with superlatives in describing the stock which Alfred H. Smith & Co., 182 Broadway, New York, have prepared for the season. It is one of the finest, handsomest and most complete stocks of precious stones, including diamonds, rubies, emeralds, sapphires, opals, pearls, etc, and mounted goods, composing a great variety of brooches, pendants, earrings, etc., set in the most artistic styles.

—The volume of business which has fallen to the lot of Smith & Knapp, 182 Broadway, New York, so far this year has been much in advance to that of the same period of last year, which was a very good year in itself. This state of affairs has been partly due to the large business they have done in diamonds, which still continues. The firm are producing some new gold cases, which for beauty of design and fineness of workmanship, are unexcelled by anything in the market, in the same line.

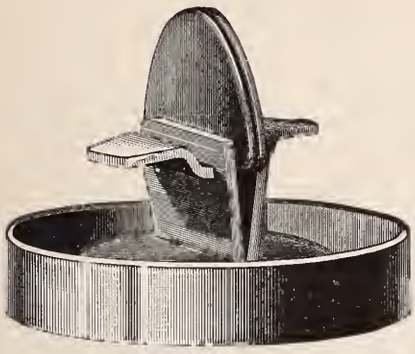
—In the Supreme Court of Massachusetts, on October 21, Judge Holmes issued an order restraining the United States Watch Company of Waltham, from advertising their product as "Waltham watches." The action of the court was upon an application by the American Waltham Watch Company, which alleged that their competitors were endeavoring to deceive the public in representing that the watches they sold were "Waltham watches," whereas the only watches which can be legally sold under that name are those made by the plaintiffs.

—Ketcham & McDougall, 198 Broadway, New York, who are known all over the country as the premier manufacturers of gold and silver thimbles, have produced several extremely beautiful patterns which cannot fail to be successful. One, No. 130, in rope pattern, of oxidized chased silver, or plain satin silver, is very attractive, as is the same pattern in Roman gold, No. 61. These patterns, though but just introduced, have already a lively demand, and numerous orders for them have been received. This house are displaying the finest line of thimbles which has been placed upon the market. They are in 10k. and 14k gold, and have in the band daisies, lilies-of-the-valley, pansies, and other pretty flowers exquisitely worked out in enamel. Another beautiful line is embroidery gold thimbles, intended for light sewing; in these the entire outer surface is in chased designs. All these lines are especially adapted to the fall and holiday seasons, and dealers should not fail to see them. A couple of novelties are shown in the firms' advertisement on another page.

—The Ott & Brewer Co, Trenton, N. J., manufacturers of the celebrated "Belleek" China, have opened a New York showroom at 65 Reade street, H. G. Angell & Co., agents; where they have fitted up a handsome little art room for the display of their beautiful goods. This famous Belleek ware was first manufactured in Ireland, and was not made here at all until Ott & Brewer began to perfect it. In the beginning of this costly experiment the original fabric was a simple foundation upon which they have improved to such a degree that their productions now equal in delicacy and color the best specimens of the antique egg shell to be found in the famous collections of the world, and stand to day as a triumph of the potter's skill in manipulating the simple but refractory materials from which it is made. Connoisseurs in fine china invariably express their surprise at the extreme lightness and delicacy of this ware. Some idea of the marvellous lightness may be gained from the fact that one dozen cups and saucers, making twenty four pieces weigh exactly sixteen ounces. To the original beauty of Belleek in its pure white state, is added the most artistic decoration in color and gold. Every piece, however lightly it may be touched by the artist's pencil is a gem, while some of the richly ornamented pieces are regarded as the most perfect specimens of art produced by the modern potter. The most striking pieces of this superb array are the large vases of exquisite modelling and delicate workmanship, made of the same comparative degree of lightness as the smaller objects, and so designed that they present a broad, clear field for the elaborate decorations in enamel or gold relief and chasing. The appreciation by American collectors is sufficient evidence that the productions of the Ott & Brewer Co. have been largely instrumental in dispelling the old time prejudice of Americans against goods made in this country. A choice selection of this ware should be found in the stock of every first-class jeweler. Those visiting New York this season can spend a few moments profitably and pleasantly at the showrooms of The Ott & Brewer Co., 65 Reade street.

WHEREFORE ?

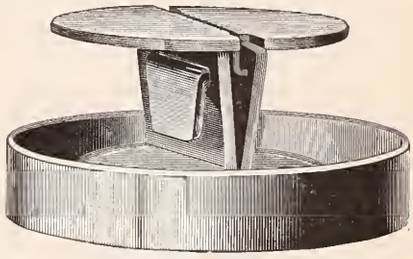
A certain firm of Wholesale Jewelers doing business at **4 MAIDEN LANE, NEW YORK,** under the name of **J. T. SCOTT & CO.,** are manufacturing a line of cuff buttons called the



OPEN.

ANTI-SWEAR

The action or fastening of these buttons is new and simple, and entirely different from any other button ever made: its novelty being that it is automatic in its working, both in taking out and inserting in the cuff. These are some of the reasons given those who have used them.



CLOSED.

WHY ?

It is the best cuff button now in use. It may also be claimed for it what its name implies—a sure remedy for a certain kind of profanity, Also from the large number of endorsements which have been received from different members of the trade, recommending their durability and speaking very favorably of the ease with which they sell in competition with other lines of buttons. It is

BECAUSE

Of the above reasons, and because of the fact that this is the only line of cuff buttons **which is not sold by the dry goods trade,** thereby preventing ruinous competition, upon which fact the well-known **OHIO RETAIL JEWELERS' ASSOCIATION** passed a resolution endorsing this line of buttons, and the method of selling them **only to the retail jewelry trade;** and also because it is stated that the line of patterns placed upon the market this season is the finest ever shown.

The trade are solicited to try these buttons, as the makers believe that they will find them to be all that is claimed for them. Send for a selection package to

J. T. SCOTT & CO.,

SOLE MANUFACTURERS,

4 Maiden Lane, New York.

Among the Watch and Clock Companies.

—It is said that Waynesboro, Pa., is to have a clock factory.

—The latest city to want a watch factory is Providence, R. I.

—The force of the Waltham Watch Factory has been increased lately, until now it numbers about 2,000 persons.

—Treasurer Hammer, of the United States Watch Co., has returned from Tamworth Iron Works, N. H., where he sojourned for the summer.

—The Otay Factory is producing 30 watches per day, and yet, it is said, it is impossible to fill all orders. The new pendant-set is now on the market. It is the invention of Supt. P. H. Wheeler.

—One order for the fall delivery of the United States Watch Co.'e (Waltham) movements exceeds $16,000 in volume. The averags product for September was more than one hundred watches per day.

—The demand for bench space at the United States Watch Factory is so great that an addition to the plant cannot long be deferred. Work on six of the celebrated screw machines is fairly under way.

—It is stated that the Manufacturing and Mercantile Bureau of Denver, Col., is in correspondence with an Eastern watch company, with a view of establishing a factory in that city. The name of the company is not given.

—The representative of an Eastern watch company visited Salt Lake City last month for the purpose of finding out that city's advantages as a location for a watch factory, which will employ over two hundred hands at the beginning, and will increase to 1,000 if the trade will justify. Should this enterprise be inaugurated, it will be followed by other works—chief of them being a watch-case works.

—The Illinois Watch Co. have just completed two special 16-size gilt movements for Superintendent Mitchell and Foreman Springer. They are of the new design, with several special features introduced by the former gentleman. There are in the watch sixteen of the finest ruby jewels that could be procured; the old-time plain top has been discarded, and the whole surface is a beautifully engraved landscape; the dials are glass enameled in colors. These movements are claimed to be the most elaborate 16-size ever manufactured in the United States.

—In the county court on Tuesday, October 13, the Aurora Watch Factory case was practically settled, both sides agreeing on an order to be issued by the court accepting the assignee's report and discharging him from further duties and obligations. It appears that the unsecured claimants against the watch company will get about eight per cent. of their claims. The principal unsecured claim is that of A. Somarindyck for $99,000, money advanced to pay employees and to pay notes which he had signed for the factory at the banks. Besides this loss Mr. Somarindyck is interested to about the same amount in stock which is all wiped out, and about half as much in bonds on which he was paid forty cents on the dollar. He has thus sunk over $200,000. Assignee Evans made his report, and was allowed $4,000 for his services.

The Other Side of Life.

TWUE!

FASSETT—What! wearing evening dress this time of day! Why, it's only noon.

CHOLLY CHOLMONDELEY—Aw, but it is six o'clock in London, doncherknow.

THE CEASELESS COIL OF WORRY.

PONSONBY—A load seems to be on your mind, Popinjay. What's up?

POPINJAY—I am disturbed by an article I have just read. The writer proves that in one hundred and eighty two years, the earth will be so over-populated that there will not be enough food for people to eat.

PONSONBY—Why should that worry you? You'll be dead by that time.

POPINJAY—But how about my great-great-grandchildren?

BE FASHIONABLE OR DIE.

HUGGLE—Wedding rings for men are coming into fashion again.

KISSEM—They are? Then I'll break off my engagement with Alice Scott.

HUGGLE—Wouldn't you wear one?

KISSEM—Oh, yes; but I can't afford to buy two wedding rings.

AN EFFECT OF THE MCKINLEY BILL.

BINKS—Why do you wear your glasses so high on your nose, Jinks?

JINKS—(who reads the papers)—The *Slasher* says that the tariff has made eyeglasses go up.

A DISTINCTION.

He was running to catch a train.

"What time is it?" he asked.

"Standard or town time?"

"Railroad time, you fool!"

INNOCENT WOMANKIND.

MRS MAGNUS SCOTT—Are you going into the optical business, Mr. Snively?

SNIVELY—Such an idea has never crossed my mind.

MRS. M. SCOTT—My husband was saying this morning that you were buying out a store at the rate of 10 cents a glass. As he didn't specify the class of business, I inferred it was an optical store.

Though there are cycles of Time, it is reasonable to assert that the old gentleman never rode them.

WOULDN'T WORK THE PUBLIC THIS TIME.

On the Rialto:

H. IRVING BOOTH—Why did Maudline Pall fail in her starring enterprise?

POSSART BARRETT.—She had her diamonds stolen.

CONSISTENCY NOT A JEWEL.

ACTRESS (queen in extravanganza)—It seems ridiculous that I should wear diamonds about an inch in diameter.

MANAGER—You will have real diamonds to-night; I will also provide real poison in the grand spectacular queen-poisoning scene.

THEY BLUSH AT THE BARE GROUND.

STRANGER (in Detroit)—Is the whole population of this city near-sighted?

CITIZEN—Oh, no.

STRANGER—Then why are you all wearing eyeglasses?

CITIZEN—It is immodest to see with the naked eye.

BUT NOT USED AT RACES.

CHIPP—Peculiar thing about this watch; everytime I get short of money it stops.

CHAPP—Remarkable!

CHIPP—Yes, it stops at Simpson's.

CHAPP—It's a sort of stop watch.

BOOZELY'S AN ALDERMAN.

BROWN SMITH—That's a big diamond Boozely sports.

ROBINSON JONES—Yes; it's one of those phosphorescent diamonds which absorb light.

B. S.—Ah, I suppose it has absorbed the light of his intellect.

A NICE QUIET CITY.

FIRST DRUMMER—The new clock in the Public Building in Philadelphia will run a whole year without stopping.

SECOND DRUMMER—You don't mean run; you mean go. Nothing runs in Philadelphia.



VOLUME XXI. NEW YORK, DECEMBER, 1890. No. 11

THE JEWELERS' CIRCULAR AND HOROLOGICAL REVIEW.

OFFICIAL REPRESENTATIVE OF THE JEWELERS' LEAGUE, THE NEW YORK JEWELERS' BOARD OF TRADE, AND THE JEWELERS' SECURITY ALLIANCE.

It is also the Recognized Exponent of Trade Interests.

A MONTHLY JOURNAL DEVOTED TO THE INTERESTS OF WATCHMAKERS JEWELERS, SILVERSMITHS, ELECTRO-PLATE MANUFACTURERS, AND THOSE ENGAGED IN THE KINDRED BRANCHES OF ART INDUSTRY.

SUBSCRIPTION.—To all parts of the United States and Canada, **$2.00 per Annum,** Postage Paid. To all Foreign Countries, **$3.00 per Annum,** Prepaid.

☞ *All communications should be addressed to*

THE JEWELERS' CIRCULAR PUBLISHING CO.
189 BROADWAY, NEW YORK.
CHICAGO OFFICE, 125 STATE ST., Room 18.

☞ *Advertising rates made known on application.*

Subscribers will do a favor by notifying us at once upon the non-receipt of any number of THE CIRCULAR. The mails will occasionally miscarry, but we will cheerfully make good Uncle Sam's little shortcomings by sending another copy to replace any missing one.

GOSSIP OF THE MONTH.

☞ A full Index to Advertisements and a Table of Contents wil be found on Page 5 of this issue.

WITH the oncoming of the holidays the retail jeweler is again called upon to devise means of attracting the swarms of sight-seers and shoppers that begin to crowd the thoroughfares on the alert for gifts and novelties. He can feel assured that other merchants in his town, dealing in similar lines, are sharpening their wits in the effort to win their share of the season's patronage. He too must be up and doing or be placed at a disadvantage in the competition. Close study is required if the best results are to be attained. The methods of advertising are too numerous to be dwelt upon here, and we would simply remind the retailer at this time of the supreme importance of window-dressing as a factor in drawing trade. Store decoration is accordingly the theme of a special article which we have prepared for this issue. A jewelry store should be furnished in a manner becoming to the artistic nature of the goods it contains. It should be made an attractive and pleasant place for persons of taste and refinement to visit. The stock displayed should be varied, especially at this season, including many side lines of pottery, cut glass, musical boxes, cutlery, fancy leather, etc. These goods command a good sale nowadays, and they are akin to the jeweler's regular line. They also help to make a store attractive, and if a jeweler is up to the times he must to a greater or less extent avail himself of these accessories. But of paramount interest now, it seems to us, is the matter of window display. Originality and variety are the ends to be attained here, and the dealer will find that if he is to attain them his best thought will be required. We have endeavored in the accompanying article to give a number of suggestions that might be found of value to out-of-town-dealers, illustrating some of the best examples of the window dresser's art in the metropolis for the readier comprehension of the reader. If this article is carefully studied, and the rules it contains are noted, we see no reason why the jeweler should not secure the lion's share of the holiday trade. By the very nature of his goods it is his. But in trade there is no law of entail. The most enterprising and far-seeing is quite sure to win. Let the windows be attended to then, as the height of the season is at hand, and let the stock within be so arranged and displayed as to please the searcher after seasonable gifts.

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Consult ELSIE BEE *if you want to know what to buy for the Holiday trade.*

*** *** ***

THE loud pretensions of the watch-faking newspapers have been somewhat abated of late. They are puffing and blowing to keep up appearances, but nobody in particular is interested in their performances except an occasional rural subscriber who, gulled into ordering a watch through their flattering announcements, finds that things are not what they seem when viewed through the medium of a newspaper that knows less about watches than it does about astronomy. They advertise to furnish watches to their subscribers at trade prices, but do not send the watches their advertisement calls for. They are therefore guilty of the same fraud as the "sharks" whom they have been denouncing so vigorously in their columns. They advertise Association cases *guaranteed for fifteen years*, but they actually furnish cases made by an outside concern which are only guaranteed for five years, and cost from $2 to $3 less than those advertised. It would be a work of supererogation to expose further the tricks to which these venders of merchandise at cost resort, in the attempt to humbug the public into believing that they

can get something for nothing. It is a worse nuisance than the lottery nuisance, and if it is persevered in by the newspapers will probably meet the same fate. However this may be, dealers can prevent their customers from being humbugged by showing up this discreditable dodge of the watch faking newspapers.

*** *** ***

If you are an optician or wish to become one DR. BUCKLIN'S *series on "Mechanical Ocular Defects," is just what you want.*

*** *** ***

JUST HOW this meddlesome invasion of the newspapers into the field of trade reacts against them was shown last month in Lancaster, Pa., when a traveling agent of the New York *World* went down there to write up the town's industries at so much a column. A meeting of the prominent business men of the city was called and the agent was working on the *esprit de corps* of the citizens with some prospect of success. But he encountered an unexpected obstacle. A well-known jobbing house of that city, whose unswerving loyalty to trade interests has been tried and proved on many occasions, quietly informed the townspeople by a public letter that the New York *World* had grossly violated the rights of at least one industry of the city, that is the watch-making industry, and advised against the scheme. The boom was a flat failure. The emissary of the *World* went away sorrowful, having learned a lesson in retributive justice that he will not soon forget. And the end is not yet. The far-reaching effects of the blunder of the newspapers will bob up like Banquo's ghost when least expected, and will not down.

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Read the article on "Store Decoration" in this issue and keep it for future reference.

*** *** ***

THREE weeks ago Wall street hung trembling in the balance. A breath seemed all that was needed to turn the scale and precipitate a panic. By the prompt and liberal action of the banks a panic was fortunately averted, and the flurry in the stock market did not develop into the widespread financial disturbance expected by some. To be sure the mercantile world did experience a sympathetic shiver, as it were, at the sore distress in the money center, but it escaped serious harm owing to the very solid and satisfactory state of trade. Perhaps after the clouds break the day will be the clearer for the re-adjustment of values in Wall street. We can regard it as a danger past. The fall business has been fully up to expectations, and though collections have been slow, failures have likewise been few. The commercial world, it would seem, had rather more to be thankful for this Thanksgiving than the speculators of Wall street.

*** *** ***

Your windows may be your fortune now. Don't neglect them.

*** *** ***

QUITE a number of European factories are expected to come to the United States as a result of the passage of the McKinley Bill, in fact, sites for several have already been located, and many of the most famous industrial concerns in Europe will maintain branches in America as a means of marketing their product here without paying the heavy duties. Another feature of the bill, not so pleasant, is that it threatens to affect very seriously the success of the Chicago World's Fair. In European manufacturing circles the opinion is generally expressed that participation on the part of foreign producers would be a waste of money. It seems as though the effect of this measure were destined to expand and develop in ways now little foreseen.

*** *** ***

See an example of unique local advertising on page 78.

*** *** ***

THERE is a disposition on the part of some of the retail trade, we are informed, to postpone purchasing imported clocks, bronzes and porcelains in the expectation that a speedy reduction of the tariff on these articles will be the result of the recent Democratic victories. Of this, a moment's reflection will show there is little probability. The high-tariff party still has control of the Senate and Executive, and will likely resist all attempts of the opposition to tamper with the McKinley bill. And even if the party now in power should see fit to modify some of its provisions in consequence of the late reverses, it is highly improbable that the clauses on porcelains, bronzes, etc., would be touched. At the least calculation it will be two or three years before the change could be effected. Meantime imported clocks and bronzes will be sold, and the vital question for the retailer is whether he will sell them himself or lie back and allow some one else to do it.

*** *** ***

If trade strays your way, let your show windows invite it in.

*** *** ***

ANOTHER year has rolled around, and with its closing calends brought another re-union of the New York Jewelers' Association about the festive board of Delmonico's. Trade rivalry gave place for the nonce to trade revelry, without which now to many jewelers the year would not be rounded and complete. The gentle exhortation and witty sallies of the speakers and the spirit of camaraderie and good-will pervading the entire board are the very oxygen of the trade atmosphere. Deprived of it, the participants would hardly be equal to the task of forming the customary good resolutions for the New Year. The last banquet, which occurred on the 20th ultimo, was no exception to the general rule. It was a perfect success, the crowning of the year's endeavor, and an earnest of the year to come, and happy will those who took part in the festivities be if they can carry into the business of the next twelve months the spirit of that festal hour.

*** *** ***

THE NATIONAL Retail Jewelers' Association, of Philadelphia, is vigorously prosecuting its crusade against watch club lotteries. Though it is now directing its efforts to stamping out the evil in the Keystone State, it will soon carry the war into other States. Simultaneously with the work of the Philadelphia organization, other assocations, both inside the trade and out, have joined the movement for the extermination of the lottery nuisance. In Cincinnati the local authorities, backed by the Ohio Retail Jewelers' Association, are enlisted in the cause. If we turn to the Southwest, we find the same state of feeling. At Sedalia, Mo., last month, several jewelers are reported to have been indicted for advertising their business by giving clocks and watches to be drawn for. The lottery business is evidently falling into disrepute all over the country. Jewelers have been the principal sufferers from the iniquity, and in organizing to crush it out, they are but acting in obedience to the law of self preservation. If while protecting themselves they are also able to do a public service, so much the better. The most useful work a guild can engage in is the correction of just this class of evils, which are alike injurious to the public at large and to the honest and conscientious members of the craft.

*** *** ***

THE NUMBER of robberies of which jewelers are the victims, is always great at this season of the year, when stocks are large and clerks are busy. This is the thief's opportunity, and his keen wits are now occupied in inventing schemes and plots for the poor jewelers' discomfiture. The most common methods resorted to are the pennyweight trick, *i. e.*, the substitution of paste for genuine stones, the window-smashing *coup de main*, and the tray-snatching dodge. Besides these, of course there are many other devices of the light-fingered gentry. The most unexpected ruse is the one he is likeliest to adopt and catch the confiding jeweler off his guard. To protect himself from these natural enemies, the jewelers should make it a point to read and remember all publishedacc ounts of their methods as given from time to time in the CIRCULAR, and observe every precaution in showing his goods to customers. A little gun kept in a

handy place, is a good thing for a jeweler to count on in an emergency, of course, but the most adept thief to-day is too shrewd to face a pistol. He depends on his wit and coolness for his success and shuns personal encounter.



[From Our Special Correspondent.]

Chicago, November 26, 1890.

It would seem as though it was almost impossible to improve upon the elegant interior of the mammoth retail store of Giles, Bro. & Co. This has been done however, and as a result, an entire refitting of handsome cases and fixtures is the result. When completed there will be no handsomer retail salesroom on the continent. This firm are ever busy, so much so that it has been necessary to work a portion of their force at night. Their celebrated anti-magnetic shield for watches continues to increase in popularity and is now almost universally adopted by all railroads entering Chicago.

Goldsmith Bros., the refiners and assayers, continue to issue their little pamphlets regarding the refining of precious metals, etc. This firm are ever ready to furnish their friends with all information desired. They do an immense business in buying old gold and silver, sweepings, etc. It is only necessary to give them one trial to be convinced of the reason of their popularity. M. Goldsmith of the firm spent a few days in the East recently.

A call at the different Western offices of most of the large silverware concerns elicits the information that it is next to impossible to get goods to fill their orders and it is apparent that a number are going to be short on their holiday orders.

A. L. Smith, of the Geneva Optical Company who has been spending some days in Denver, Col., has returned to the city. The popular optical firm of which he is manager have now a fully stocked branch in Denver. The Company's constantly increasing western trade demanded the establishing of this branch.

The results of the visit to Europe, of Mr Spaulding, of Spaulding & Co., are plainly seen in the handsome display of imported lamps, shades, etc. This house have a record for showing some of the handsomest novelties of any retail house in the trade.

The ring gauge recently patented and manufactured by A. W. Engel, of 115 Dearborn street, has already become popular. He is having an immense call for them. Some improvements on the original have just been made.

The firm of Benj. Allen & Co., State street, have just issued a model catalogue. The book, containing some seven hundred and sixty pages, is, without exaggeration, almost a work of art. It is handsomely bound and fully illustrated; no one department of this large house faring better than another. The optical department, watch department, etc., alike having a splendid showing. It is a book that no retail jeweler in the country should be without. Send for it. Send in your business card and get one of the handsomest and most useful catalogues ever given to the trade.

The Pairpoint Manufacturing Co., are as usual to the front with their novelties in solid goods Some of the designs and articles shown by this house are marvelous. Visit their salesrooms when purchasing for the holidays and you will certainly find what you want.

The Geneva Optical Co., have recently remodeled and refitted their large store on Washington street.

The ring clamp, patented and manufactured by J. L. Ackerman, Lowell, Ind., and which was illustrated in this journal is taking unusually. Mr. Ackerman is behind with orders all the time.

Retirement of Charles A. Fowler.

ON THE first of January, Charles A. Fowler, of the well-known firm of Fowler Brothers, manufacturing jewelers, Providence, R. I., retires from the firm whose position in the trade to-day is due largely to his energy and executive ability, and will henceforth enjoy the leisure which an ample fortune and a career of successful effort entitle him.



Mr. Fowler was born at Fishkill, N. Y., May 2, 1848, coming of old English stock running back to a Saxon chief mighty in the chase, as far in the centuries as A. D. 728, the line extending down through William Fowler, the head of the American branch, who came to this country in 1637.

The Fowlers have always been men of force, mark and consequence. Among them have always been men of culture, and the practice of medicine and surgery has been one of the specialties, in which they have successively achieved eminence, the father of the subject of the present sketch having been for many years a distinguised physician of Fishkill. Charles Anthony prepared for college at the Duchess County Academy, Poughkeepsie. After engaging in other commercial pursuits, he finally, in the Fall of 1874, organized the firm of Fowler Bros., manufacturing jewelers, with factory at Providence and office in New York. This house soon became the leader in its particular branch of business, owing its principal meed of fame to taking hold of (or rather making) a specialty, and sticking to it until at the top of the pyramid. This specialty was a silicate composition in close imitation of English crape, known as "Fowler's English Crape Stone; an article used for mourning jewelry, and in high repute among the *haut ton*. While retaining the crape stone as a specialty, the firm has been constantly producing some of the most original and artistic novelties offered to the trade. In fact, they have been recognized as one of the leaders in the line of plated jewelry, largely owing to Mr. Fowler's energy and excellent judgment. While devoting himself heart and soul to the forwarding of the firm of which he was a partner, Mr. Fowler has been equally zealous in the furtherance of the interests of the trade at large. He was among the first to ally himself with the Jewelers' League, is a director in the Jewelers and Tradesmen's Company, and has been, and is, identified with many other enterprises and societies within the trade, while outside his chosen walk, we find his social qualities recognized by a membership in the Union League Club and the New York Athletic Club.

Mr. Fowler will devote himself for some time to come to travel and the education of his children, sailing for Europe shortly, to be absent several years. In his retirement, the trade loses an able and honored member, but his large circle of friends will feel sure that in whatever field he may apply his energies, the same sterling qualities that won him so prominent a position in the trade will find ample play and full recognition.

Hartmann's patent inkstand is one of the most ingenious devices in its line now on the market. It is a model of convenience and usefulness. It gives complete command to the writer over the fluid and overcomes the many objections found in other inkstands. These goods can be handled with profit by jewelers, especially at this season of the year. The inventor and manufacturer is Peter Hartmann, 36 Maiden Lane, New York, who has been known for years as one of the foremost makers of silver filagree jewelry. He has a large stock of this jewelry on hand especially prepared for the holidays.



TRADE MARK.

STERLING $\frac{925}{1000}$

FRANK W. SMITH,

Silversmith

GARDNER, MASS.

Full Line of Plain and Fancy Spoons, also Hollow-ware.

SILVER DEPOSIT WARES.

PATENTED JANUARY 5th, 1885.

The immediate success that has attended the introduction of ***Silver Deposit Work*** on Crystal Glass, by the Alvin Mfg. Co., has caused them to largely increase their assortment of these most beautiful wares. New and beautiful designs are shown in Cologne Bottles, Decanters, Claret Jugs, Carafes, Ink Stands, Flasks, &c. Their newest and most striking production is a class of decoration known as ***Bas Relief Ornamentation*** and consists of a most beautiful decoration of vines, flowers, foliated and conventional designs, chased in high relief on crystal glass surfaces. Universally admitted to be the most original, unique and beautiful conception in silver that has been introduced to the trade in years,



ALVIN MFG. CO., Silversmiths,

Broadway & 17th St., Union Square, N. Y.



Bracelets a Specialty.

Padlock Bracelets,
Knife-edge Bracelets.
Chain Bracelets,
Diamond Bracelets,
Link Bracelets.
Flower Bracelets,
Adjustable Wire Bracelets,
Enameled Flower Bracelets,
Children's Bracelets.

A. ALLING REEVES,

21 Maiden Lane, New York.

A FULL LINE OF 14K. JEWELRY.

LACE PINS, EARRINGS, EAR STUDS, SCARF PINS, SEALS AND CHARMS.

STORE AND WINDOW DECORATION.

THE BENEFITS of effective window and store decoration and display are universally appreciated. No business can depend solely upon a clientage of customers. Transient trade is necessary to success; the circle must be constantly broadened. Nothing in nature is stagnant; everywhere there is constant motion. So it is in business The volume of trade of a commercial enterprise cannot remain stationary; it must either increase or decrease. To increase is certain success; to decrease, certain collapse. And it is the transient trade that brings increase, and proper advertising that brings the transient trade. The most effective of all advertising for a retail business is artistic or attractive window display and store decoration. At no season of the year is it so important that the windows and interiors of stores should be attractive as the present, when the thoroughfares are crowded with holiday shoppers and sightseers.

The general principles underlying the art of window dressing were stated at length in the issue of this journal for December 1889. To epitomize:—the windows must not be overcrowded; quality and manner of arrangement are the principal magnets, though a sufficient quantity of goods must be displayed to rouse the interest of the spectator. Second, the display must be bold, either as regards the articles shown or the manner of showing them. Third, the architectural peculiarities of the windows should lend themselves to the purpose, a fact that dealers seeking new quarters should bear in mind, as these peculiarities will either prove an advantage or a disadvantage. Fourth, the windows should be embellished with draperies, plushes, laces or the like, of harmonious colors. Fifth, the framework, cases, mouldings and other wood work should be consistent in character with the artistic nature of the goods. The following matter dealing both with windows and interiors, will, it is hoped, furnish suggestions for embellishing the store in general. Real displays are described, each to the writer's mind containing some salient feature which can be applied as successfully by other establishments. The first displays to engage our attention are those of an essential jewelry character.



ARTISTIC SILVERWARE DISPLAY. ROGERS & BROTHER.

JEWELRY WINDOWS.

The windows of J. H. Johnston & Co., Union Square, were fully described last year, but their ever-changing beauty warrants another description of these displays, which are undoubtedly among the daintiest in the city, where they have become well known to all sightseers. From an architectural point of view the windows lend themselves readily to the dresser's art. They project well into the street, the two corner windows being enclosed by a bright bronze railing. In the main window facing on the principal thoroughfare is a mirror arranged diagonally upon the flooring, which simulates a lake, upon which sit butterflies, fishes, flowers, etc., represented by jewelry. On each side of the lake are green coverings supposed to resemble lawn or the banks of the water. On this green material are arranged jewelry, cased or simple. Two cases, one on each side of the window, are of shell form and contain diamond rings, and several cases in crescent form contain crescent gemmed rings. Half way in the water is a case in the form of a boat, with a diamond butterfly at the bow. This boat is filled with rings. A case of snake skin representing a snake twines about the pillar in the window and contains snake rings. Particular care is exercised to keep the jewelry bright and clean, and to have the price tags which are attached to each piece carefully hidden from view. Within the space between the railing and the flooring of the windows, are in front on a pedestal, a Carrara marble figure of Venus at the bath, as if prepared to dip into the lake. This figure is occasionally replaced by that of a fisherman casting a net. A fine onyx and bronze cabinet containing pieces of bric-a-brac forms the background. The window on the side street displays watches symmetrically arranged, and a brig't polished watch rack filled with watches. The space is draped with delicate white silk lace curtains, and the ensemble is the very acme of dainty beauty. In the other window are displayed silver and cut glass wares resting on white silk, which is the best material for displaying glass. In one corner is a flower stand, and in the opposite a punch bowl; four or five pieces are shown on one side and a row of cut glass articles on the other. A feature of the display is a large umbrella stand filled with costly umbrellas. At the back several umbrellas hang downward. The care of these windows is one of the special duties of Louis B. Grumman, of the firm's force, and as he possesses considerable artistic ability and has almost *carte blanche* to purchase any draperies he desires, he succeeds to a remarkable degree in making the windows of the store a feature of the city.

The windows of Charles Casper owe their attractive powers as much to their architectural advantage as to the dressing, though the latter is very effective. The window is in shape a semi-hexagon, and thus has three spacious panes diagonally placed in relation to each other. The window is occupied by a uniquely constructed plateau in the form of steps to the number of three, semi-circular pieces being cut out of the bottom ones. These steps are covered with purple plush. The top step is filled with pieces of silverware, along the center and silver-mounted cut glass at the sides, while jewelry is symmetrically displayed on the second step and in the

semi-circular spaces. At the back of this step are arranged, occupying the whole space, small silver-plated mirrors and frames. At the back is a dainty light blue silk curtain on a brass rod, which lends good effect to the silverware and glass. This display is varied with one of white cotton ground over the flooring, ornamented with blue ribbon trimmings and ten Indian scarfs over the corners. The goods are laid on those scarfs and cotton. The effect is very rich, white cotton being particularly adapted to such purposes. This material would be more used than it is, but for its liability to cling to the clothing and the difficulty of reaching the articles. These objections may be somewhat obviated by placing white netting over the cotton.

The four large show windows of E. A. Thrall form one of the features of Maiden Lane. Reference was made in the article in last December's issue to the geometrical designs this house employs for window decoration. These are still retained, though the shapes are constantly changed. Each window has a special clerk to care for its dressing, who has *carte blanche* to select any goods in stock for the purpose. All the floorings are covered smoothly with navy blue cloth, excepting the back portions where the covering is effectively rough and raised. In the first window the design is a half of a ten-cornered star; the outlines are chain bracelets; the center is a bonbonniere with a bracelet around it. The figure is divided into six spaces, filled respectively with bracelets, gold trinkets, enameled jewelry, diamond jewelry, gold trinkets and bracelets. At each side of the figure is a T of two long cases filled with rings. In the second window two ovals or tear-shaped designs meet at the broad portions. They are outlined by watches and their interiors are filled with watches, lockets, etc., symmetrically arranged. At the sides of the windows against the walls are trays of queen chains. A circle of watches representing a sun occupies the third window. The space is filled with a design in watches, with Masonic jewels symmetrically arranged between. Gold chains representing rays spread out from the circle. In the fourth window are silver trinkets. Silver chains arranged in symmetrical curves, besides the delicate colors of garters, purses, etc., add good effect, which is further enhanced by the addition of a design in the center formed of bright colored shells.

Jaques & Marcus have an attractive window, which has preserved its character for several years. The design is after the general style of display among the jewelry stores of Paris. A fine show case is in each window, and in these are placed plateaux or walls of navy blue cloth upon which are fastened at odd places, fine brooches, lacepins, etc. Where resting places exist, fine jewelry in small cases is displayed.

SILVERWARE WINDOWS.

Where a dealer has a double window, it will prove effective to dress one exclusively with silverware, at least some days in the week, or at certain seasons of the year. The following descriptions convey several ideas for dressing windows with silverware. In the writer's opinion, one of the most attractive displays among the silverware houses is that of Rogers & Brother, an illustration of which is given in this article. There are two windows about eight feet in width and three feet in depth. The framing at the back consists of spacious sliding windows that lift from the bottom. At the sides of the windows are long mirrors. The brilliancy of the woodwork and the articles displayed, the beautiful play of bright and harmonious colors, the drapings and the taste employed in arranging the articles, are the factors in their attractiveness. Both floorings are roughly covered with peacock blue plush. In one window are three plateaux at the back covered with the same plush, on which rest at the sides a large candelabra, the middle plateau supporting a large gold lined punch bowl. In the two front corners are large rosettes, one of old gold plush, and the other of yellow plush. On them sets an athletic trophy. A large tea set occupies the central space. A photograph in a silver plated frame is on each side. In the other window there are also three plateaux at the back on which rest candelabra and a large water set. Between these plateaux on one side there is a set of knives, forks and carvers in an old gold colored case, and on the other a dressing set in a similar case. In front of the water set, is a mirror in a silver frame. In the front corners, are silver plated lamps, which are capable of being used as adjuncts of a candelabra or independently. A tray with a dressing set is located in the front center. The central space is occupied by cologne bottles and small articles.

The Gorham Mfg. Co. make scarcely any pretensions to window display though they fully appreciate the advantages of an attractive show. The architectural character of the immense store prevents the opportunity for brilliant window effect, which their celebrated goods could so well realize. The show windows are in the same plane as the front of the building and the floor space is very small. Notwithstanding these disadvantages, the dressing of the establishment's three windows is very pretty and attractive. In all the windows are fine plate glass show cases with delicate frames of mahogany. The first two are lined at the back, top, bottom and sides with elegant silver blue and emerald plush, excellent colors to set off silver ware. The other window has no particular drapery except upon the flooring which is of emerald plush. The pedestrian walking up Broadway, has his attention drawn to the first window, by reason of its being arranged diagonally to the sidewalk. It is smaller than the other windows, and just admits of the effective display of some fine candelabra, or similar large piece. The second window is about twelve feet long and in the case within is usually displayed a fine dinner set, or some large ornamental piece with several small articles tastefully interspersed. The third show window usually discloses an indiscriminate variety of silver mounted leather goods, umbrellas and other miscellanies in which the house deals. Every article shown is speckless, the glass and woodwork are polished to perfection and it is this brilliancy combined with the richness of the goods that draws the numerous passers-by to the windows. The matter of projecting the windows into the street to the extent the law allows, has been under advisement by the management for sometime and it is expected that the time is not far distant when the Gorham Co. will have the most prominent windows of all the jewelry and silverware stores on Broadway.

The show windows of the extensive New York store of the Meriden Britannia Co. are one of the hobbies of the assistant manager, Mr. Metcalfe. Firmly believing that a large portion of transient business is due to the beauty and taste disclosed in the dressing of windows, he exercises particular care in the arrangement of the stock, selection of draperies, and other factors that enter into effective display. Through this care the company have one of the handsomest windows in the city. The two broad windows stand well on the side walk. The framing is always bright, and the plate glass polished. When the writer inspected these windows, one had a fine peacock blue mat spread roughly though artistically upon the floor, bordered with a broad yellow silk sash. In one corner of the window at the back on a plateau was a large soup tureen; in the other back corner was a handsome candelabra with yellow shades to match the sash; in the front corners respectively were two large silver pieces. In the center of the front was a cake basket, and in the back an elegant epergne for fruit, flowers, etc. Arranged symetrically and diagonally at the sides respectively were a coffee set, and a water set. In the center was a tea set. The effect of the artistic symmetry and the prominence and brightness of the pieces was extremely attractive. Any ordinary dealers' stock will contain these goods, and a following of this example will prove fruitful in results. The other window was covered with black cloth, bordered by a soft green sash about a foot wide. In this were disclosed several silver mounted cut glass pieces and some bright embossed silverware. Towards the back, in the centre was a fine duplicate mirror, slightly folded; between the two folds was a dish filled with artificial ferns. Oxidized silver small wares, toilet pieces, and the like were symmetrically arranged to fill up places. The side walls of the windows are each of two large

panels covered smoothly with black cloth ; these add greatly to the general effect. Black is considered just as good for setting off bright silver as peacock blue. Black and yellow is always an effective combination.

The drawbacks to artistic dressing in the show windows of the Whiting Manufacturing Company were specified in the CIRCULAR for December, 1889. The faults lie in the architectural peculiarities and not in the goods or the ability and care of the company's force. The floorings are too narrow, and the store elevation too high. But advantage is taken for gorgeous effect, of the stores spacious frontage, and the Whiting Company's store is among the most brilliant and attractive in New York. A diagonal view of the store shows in the window facing the side street, a row of flat ware trunks with lids uplifted and draws half-opened ; numerous canes and umbrellas hang head downward from supports half-way from floor to ceiling. The effect of this arrangement is very rich. The first window on the main thoroughfare discloses a number of silver pieces in cases of bright old gold plush. The cases are arranged in artistic confusion on plateaus. The back ground of the second window is a delicate light silver blue, and on elevated stands or plateaus are elegant Alvin electro-deposited pieces. On one prominent plateau is a fine silver candelabra. Small silver framed mirrors enhance the general effect of the rich pieces and the soft settings.

Generally acknowledged attractive windows are those of Webster & White, agents for the Meriden Silver Plate Co. The store is a



MECHANICAL FIGURES AS WINDOW ATTRACTIONS.

double one, one side being devoted to jewelry while the other displays goods of the silver plate company. The window spaces are square, the floorings being on plateaux of carved walnut wood which adds considerable effect. Such square windows offer advantages for dressing purposes but are very inaccessible. In the fore part of the jewelry window is spread a cloth of soft lavender color, upon which rest numerous small silver wares; the effect of this color is very pleasing to the eyes. At the back of this lavender is a black ground on which is displayed gold jewelry. At each side of the far back is a bronze lamp with red shades; between them is a silver figure. In the other window in one corner is a marble bust on a short pedestal covered with pale green or silver grey cover. A Sevrès vase on a plateau covered with old gold plush is placed in the center. Tastily arranged along the sides are pieces of rich cut glass. A number of fancy porcelain wall pockets run around the window space near the panes. The color of the ground is black. A feature in the jewelry window which attracts much attention is a duplicate of the "Mysterious watch" described in THE CIRCULAR for September, 1889.

Though the establishment of Reed & Barton is very spacious the window is very narrow, comparatively speaking, owing to the very broad doorway which the building has. This disadvantage to effective display is, however, somewhat counteracted by the care exercised in the dressing. The building, though in the middle of the block, projects from the street line of the other buildings, thereby making the side on which Reed & Barton are located similar to a corner store. Thus a good light and plenty of room are obtained. The floor is covered with crushed pink plush with a large heart-shaped center of blue, on which are displayed numerous small trinkets. At the back center is a trunk of flat ware, with the covers lifted and the drawers half opened. On one side of this is a tea set, while an ice set is on the other. Arranged diagonally at the sides of the blue space in a line are embossed coffee sets. Cut glass and silver pieces lie snug in the folds of the roughly-placed pink plush.

The lesson which the windows of Tiffany & Co. teach is a simple one. This house make no endeavor to artistic dressing, their sole aim being simplicity and dignity. Their windows, however, are very large, and need something to break the bareness; so when they receive some particularly fine piece of bronze or porcelain or some fine timepiece, it is placed in the window with a setting in keeping. Care is taken that the colors of the plushes or cloths are not in discord with the colors or characters of the pieces displayed. The tendency in many of the larger and older establishments is toward simplicity, but such houses are perhaps less in need of advertising than the newcomer in business.

MECHANICAL NOVELTIES.

There are some exaggerated forms of advertising to attract pedestrians to a store or window which will not apply to a jewelers' establishment The smallest jewelry store contains a suggestion of refinement which no other commercial establishment possesses. We often see in the show windows of first-class haberdashers a skilled mechanic cutting skins into gloves, or in the window of an art furniture store a Turkish carpet maker at work. The same idea could not be applied to a jewelry store; the qualities of delicacy and dignity which are innate to the business prevent such illustration. Still the window may contain an artistic mechanical piece, which is in line with the general stock carried, and which through its novelty stands out prominent from its surroundings and thus attract shoppers. A mechanical clock, which accurately simulates in formation and action an engine, boiler, windmill or the like, will answer the purpose ; but perhaps the most effective device in this line is some grotesque mechanical figure which performs some simple though interesting action. These figures are imported, and are sold at first hands by but a few dealers. M. J. Paillard & Co., New York, undoubtedly handle as large a line as any in the country.

The show window of this concern is a constant source of interest and wonderment to the passing public. Architecturally the window is very wide and broad, and contains about half way up a sort of narrow balcony. On this balcony are displayed numerous small ingenious mechanical and musical toys. The flooring shows a large variety of mechanical figures particularly adapted for the windows of stores. The figures are accurately proportioned, are postured in the most realistic fashion, and are costumed as authentically as though they were actors in a Daly Shakespearean production. The effect of this display is wonderfully attractive, and when any figure is performing his part the gaping crowd that collects is often four deep.

To specify some of these devices, may be mentioned is an old woman, remarkably realistic in feature, posture and dress, who sits darning, with the ball of cord in a basket by her side. The head and eye lashes move in concert with the realistic movements of the hands as they are wont to do in such old women. Again, there is the well-known cowboy who smokes cigarettes. He is faultlessly attired, from a cowboy's point of view, and his head and eyes move with the extreme satisfaction which these lords of the plains are said to display. Next we notice a basin in which swim in real water by some mysterious magnetic influence two or three swans. Further

we see the spinning woman who breathes, her bosom rising and falling in a way to make the rise and fall of the Roman Empire tame in comparison. Her foot moves to turn the wheel and her hand and eyes move with grace and satisfaction. She is elegantly attired for one who evidently makes her own clothes. The jolly old shoemaker with last, works on his bench behind the spinning woman. He is sewing the soles on to a boot which is in his lap, the motion being very realistic. Besides these are the old woman picking a goose, two clowns fishing in a well, and the old boot black, negro banjoist and innumerable other attractive figures. A beautiful piece is the large Japanese woman (mask pedlar) with a sunshade which she twirls about, the figure moving her head, eyes and both arms, the right hand bringing from time to time a mask to her face. The expression is extremely comical. The dress of the little lady is of the richest styles of Oriental fabrics. Nearby is a new piece called the "Carmencita," after the famous Spanish dancer. It is a counter piece, beautiful in appearance and richly dressed. Her head, eyes and both arms move, one hand wielding a handsome fan. The bosom heaves with natural motion.

The window of Jacot & Son, New York, who carry an extensive line of these mechanical figures, is the most attractive on lower Broadway. There is a constant crowd before it,



A GROUP OF POTTERY. BAWO & DOTTER.

and when the figures are in motion considerable amusement is afforded to a "large and interested audience." The illustration affords a view of the figures as displayed in this window. The principal is an Egyptian juggler, gaudily dressed as we all know such personages were. He stands before a table covered with maroon colored cloth, with his hands upon two metal covers ready to perform his magic feats. When wound up he performs four chan es; each time he lifts the covers he discloses first some dice, then nuts, then fruit, then flowers The mechanism is truly wonderful, and it is only upon close inspection that the secret is evolved; from without the window the action is a mystery. On each side of the Egyptian is a flower stand of porcelain, with imitation flowers. Above the flowers is a gaudy bird which sings, flaps its wings, moves its tail, head and bill, and in general acts like a real, live bird. Near these is the doctor of the time of Moliere, in black surtout and very high pointed hat. If any one wore such a hat at the present time he would be constantly asked where he got it. The doctor leans against a table upon which lies a bottle or two of pills. He moves his head and opens his mouth in speech, one hand violently emphasizing his remarks. The other hand ever and anon goes to his forehead, as if in search of an idea, the first hand stopping its emphatic motion. When the idea arrives the animation once more commences. The action is very natural, and would excite the risibilities of a Methodist. The troubador singing and twanging to the moon is a well-known and effective piece. At the back is the dainty Japanese smoking lady, who smokes, moves her head, eyes and eye-lashes and twirls the parasol. She is a very pretty Mongolian, and dresses similar to the school girls in the "Mikado." Then there is the clown who balances a feather on his nose, beats the drum and sounds the cymbals, and the negro dude in full dress who smokes and puts a monocle to his eye, besides many other grotesque and interesting pieces.

ART GOODS AND BRIC-A-BRAC.

A prominent manufacturer expressed it as his opinion that the secret of effective display is to have the stock, by which he means that the stock should not necessarily be so extensive as varied. Having a varied assortment and displaying a sample of each line or style would attract trade. Such an idea is undoubtedly founded on sound premises. The ordinary dealer cannot carry a very varied assortment of fine jewelry for obvious reasons, and a fairly large line of such goods, occupying a very small space, no matter how spread out, will not fill up his establishment. A line of clocks and an assortment of silverware in a measure will attain this end. Still there will remain considerable space, and this he must fill up with fancy and art goods especially adapted to the jewelry grade. This clause needs emphasis. All fancy and art goods are not adapted to the jewelry trade, and, metaphorically speaking, what's one man's meat is another's poison. Certain lines of goods which are handled by other trades, and which superficially and to the careless eye appear the same as those carried by jewelers, are really not the same, and cannot be sold by the latter class of dealers. Among such lines may be specified bric-a-brac and onyx goods. Such lines are being carried by all progressive jewelers, and are proving not only very salable lines in themselves, but are helps to the sale of other goods. Thus, if a handsome onyx table or cabinet on which are shown some pottery, bric-a-brac or kindred pieces is displayed in a window or near the counter cases, the onyx piece will not only be sold, but the bric-a-brac and other articles are apt to command attention, and through the richness and beauty they lend to the surroundings will prove a lever in the sale of the regular lines of jewelry. Such an expression partakes of the nature of a truism, but truth can always bear repetition.

Onyx goods in pedestals, cabinets, tables, clocks, vases, lamps and other articles, have become a recognize ce-partment in the majority of the finer establishments throughout country. In the art rooms which many dealers have added to the the stores, these goods, especially pedestals, tables, cabinets, clocks, lamps and etagères, find conspicuous places. And their richness of color lends effect to the ensemble which perhaps no other class of manufacture can equal. Such articles sell well, as far as we know, and as before stated, aid the sale of other portions of the stock. The public has a taste for fine bric-a-brac, and nothing is more adapted from a point of beauty for supportlng bronzes, pottery or art pieces than an onyx pedestal, cabinet or table, their superiority to those of wood, green marble or plush being apparent to all. They are adapted to the palace as to the ordinary parlor.

We depict further on a portion of the rooms of S. Klaber & Co., New York, who are recognized as the caterers of this class of articles to the jewelry trade. The reader will readily discern their beauty. The room itself is very artistically arranged, and may serve as a lesson to a dealer who carries a large line of these goods. The floors are carpeted, and the general setting of the room is maroon, which harmonizes effectively with the onyx. The incandescent light feature should be noticed. The pedestal with the marble figure alone would prove an extremely effective feature in a window or in the interior of the store, say, near the door.



OBVERSE.

Solid Silver.

EXCLUSIVELY.

TRADE  MARK

STERLING.

WHITING M'F'G CO.

SILVERSMITHS.

UNION SQUARE & 16TH ST.

NEW-YORK.

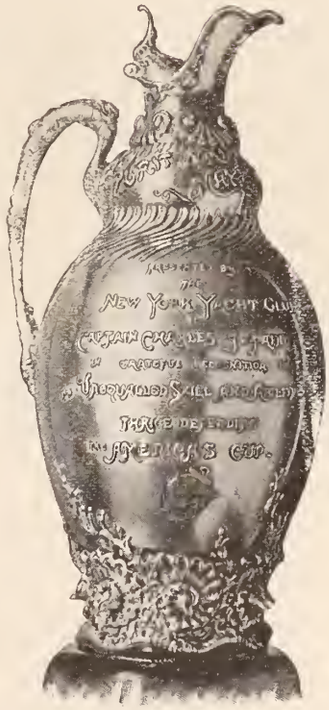
SUGGESTIONS :

I. We manufacture solid silver only, and of but one grade, that of British Sterling, 925-1000 fine ; therefore the above trade-mark is a guarantee of quality as absolute as the Hall Mark of England.

II. Purchasers secure an entire freedom from false impressions to which they are liable where solid silver and plated ware are made in the same factory.

III. The question "Is it silver, or is it plated?" is never raised in regard to a wedding present or other gift bearing this trade-mark, as it is well known that all wares so marked are solid silver, and solid silver only.

Dealers handling these goods will find the use of the above suggestions a great assistance.



REVERSE.

Though the stock of the F. Kroeber Clock Co. is very extensive, special care is exercised to display the multitudinous variety of clocks and fancy goods to best advantage. Without going into a minute description of the display, which is impossible to be effected by the retail dealer, a few features may be specified. Upon entering the store the visitor is confronted by a beautiful nickel-plated etagère, with a bisque figure in the center to fill up; nearby are a fine hall clock and a couple of pedestals with bric-a-brac placed upon them. These are seen from without the store and lend additional effect to the windows. The idea may be easily imitated by any dealer, as the articles are within the purchasing powers of all and are salable.

The illustration of the group of art pottery which was seen in the establishment of Bawo & Dotter, will convey to the mind of the reader the principles of arrangement of this class of ware. Artistic confusion should be the principal characteristic, but the arrangement should be such as to hide as little as possible the individual



DECORATIVE FEATURES OF ONYX GOODS. S. KLABER & CO.

pieces. The attraction is effected through the uniqueness of the wares and their positions. One piece of each make of pottery will prove effective; thus a half dozen pieces, such as in the engraving, one each of Royal Dresden, Royal Worcester, Doulton, Sevres, Royal Crown Derby, Beta, Hungarian and other well-known foreign makes In the drapings warm colored materials should be used, such as maroon, white or black; no off shade, such as lavender or pale blue is desirable. Some dealers place designative cards against the pieces; such should be avoided; nothing should distract from the beauty of the ware itself. Another feature to be remembered is that articles displayed should be in the reigning colors; for instance, blue is at the present time very fashionable, so if any special display is made one or more of the pieces should contain that color. Pottery has its fashions as to color; maroons have had a run of popularity and still are in demand; old ivory effects introduced last season still hold their popularity. The same fashion governs shapes, long slender shapes being now much in demand. It is well to introduce into the display, besides the reigning colors, the reigning shapes. Such a group as illustrated could be used effectively for a half or single window, or as a corner decoration within the store. Beautiful decorative effects can also be obtained with the delicate and rich-tinted American Belleek ware.

The manner of the display of goods in the show rooms of Leon J. Glaenzer & Co. contains a lesson which if studied by dealers, especially wholesalers who carry extensive and varied lines would prove of benefit to them. Perhaps no house in the same or kindred lines make so effective display. Especial care is exercised to attain this desirable feature. The firm occupy three floors of a building which are divided into comparatively small rooms, in similar fashion to a private house. In each room is a table in the center, with others along the sides. Occasionally a cabinet occupies a corner and some pedestals are employed. The tables are covered with maroon plush which is the color most harmonious to those of the various makes of fine bric-a-brac, clocks, pottery, etc., in which the house deals, and which are symmetrically arranged upon the tables. Occasionally plateaux are used on the table to bring out the effects of certain sets. These rooms are thus more of the nature of an art museum rather than of the selling department o a commercial house. The effects of such an arrangement are obvious. The visitor passes from one room to another, and this interest is constantly excited for he sees a little at a time. If the whole stock was arranged upon a few long tables, as is usually the case, he would see all at once, and see nothing in particular. In the present case, one room contains, for instance, Vernis Martin furniture, with pieces of pottery arranged upon the top; another shows a fine line of Dresden vases and bonbonnieres; another imported clocks of all kinds; another small wares in pottery; and so on.

Perhaps one of the most effective modes of displaying bric-a-brac is by means of a cabinet at one side of a window or near the door. In A. Klingenberg's, New York, are three large mahoangy cabinets, one in the window and one at each side of the store. These cabinets contain from ten to twelve compartments, each occupied by some noticeable piece of ware. The principal cabinet had arranged on it at the top a vase of Rhenish Crown, and a piece of Adderly ware, one on each side, with a Doulton dragon jug between them; then the three compartments below disclosed a bisque figure on each side, with numerous small Dresden figures between them; again, the three compartments next below showed a large Dresden figure on each side with small Dresden figures between, and in the three lowest compartments were arranged Hungarian and Vienna ware, with Cloisy Le Roi between. The effect was very striking.

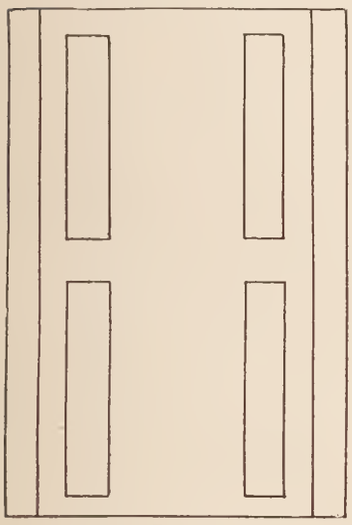
STORE FIXTURES AND FURNITURE.

As before observed the effect of interior arrangement is, in a large measure, dependent upon the character of the setting—that is, the decoration of the ceiling and walls, the carpeting, the draping, and, above all, the fixtures, cases, and other wood work. The finical

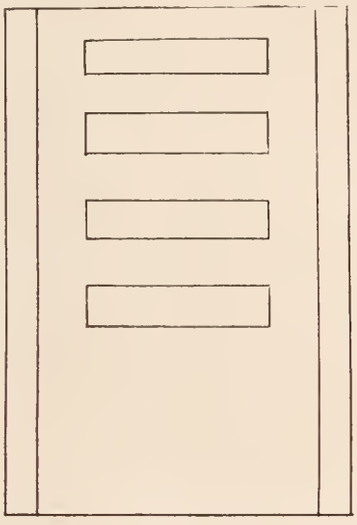
nature of jewelry and its kindred lines necessitates the observance of particular care in the selection of the cases in which the goods are to be displayed. Such a remark needs no emphasis. Every dealer understands that apparent delicacy must be the leading characterstic of his cases. No ponderous moldings should be employed under any consideration ; they are unsightly under ordinary circumstances, and veritably painful to the sight in a jewelry store, where delicate beauty is the first impression upon the mind. If it were possible to have the cases formed entirely of glass, the effect would be all the more desirable.

The more transparency, so to speak, the store has, the more attractive the effect. Do not hide any portion of your display. The backs of the counter cases—that is, the opening parts—should be of plate glass. As the stores of most dealers are narrow, necessitating the placing of the counter cases along the sides, against which are usually wall cases, this transparency is particularly to be desired, for obvious reasons. These two characteristics—delicacy of molding and transparency—are the principal essentials in cases for effective display. There are several other qualities fixtures should possess, of a mechanical rather than ornamental character, which will be introduced further on.

The majority of the finer jewelry establishments in the country are employing the woodwork of B. & W. B. Smith, New York, and this firm are fitting almost every new jewelry store, as well as every store that is being remodelled. The house has come to be considered among jewelers as the exclusive furnishers in their line, for their work fulfills every requirement of beauty and mechanical perfection. As this work is considered the ideal for jewelry stores, a description of it may not be out of place. It is undoubtedly known



Plan A.



Plan B.

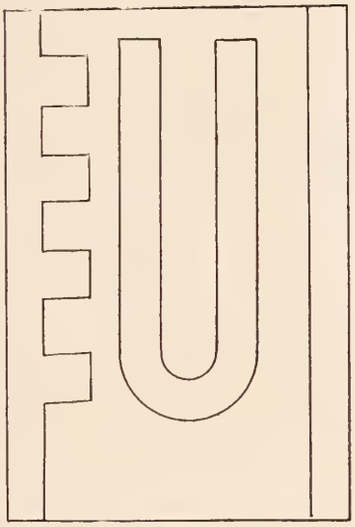
to every dealer in the country ; still, the underlying principles which produce the effects so much admired may not have been so fully considered.

Counter cases are arranged on four general plans, each possessing more or less advantages. These plans are designated A, B, C and D. In plan A the cases are arranged lengthwise along the sides of the store in front of the wall cases. This is the common plan—common because necessary, the ordinary jewelry store being too narrow to admit of any other arrangement. In plan B the cases are arranged down the centre of the store at right angles to the wall cases, space being allowed all around them for walking. The advantages of this arrangement are obvious ; space is economized and the full effect of the wall cases is materialized. Plan C consists essentially of having counter cases along one side in front of the wall cases, and having pavilions or wings along the other side. By this arrangement a greatly increased display in the side cases is obtained. Plan D is undoubtedly the most effective and greatest economizer of room. It consists of the fully disclosed lines of wall cases and a so-called horse-shoe case down the centre of the store. Here half the space behind the counter needed by salesmen is saved, the fullest effect is gained for the side cases, and the arrangement itself is artistic and attractive. This plan is utilized by many large stores, such as those of the Gorham Mfg. Co., Whiting Mfg. Co., and J. H. Johnston & Co.

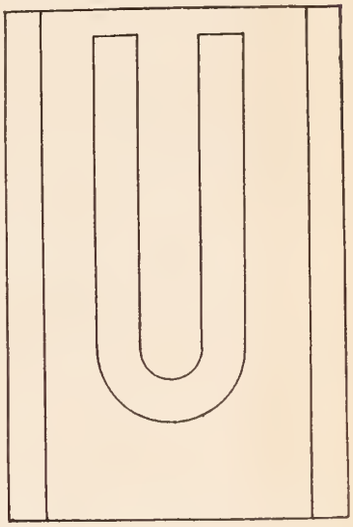
In cases the following, among other, qualities are desired : The doors should be convenient to open and close, and should not be liable to get out of order ; they should admit of the articles within being easily reached ; the likelihood of breakage of the mirrors or with which they are glazed should be reduced to a minimum. In the manufactures of the firm above mentioned these characteristics prevail. Hinges are dispensed with, room is economized, and dust is excluded. The improvement consists in the application of perpendicular sliding doors or sashes, in place of those which are controlled by hinges or springs. The sliding doors fit tightly into grooves, and are so adjusted as to run smoothly and with ease, thus avoiding the danger of breaking the glass or mirrors. In the counter cases the doors are controlled by friction springs affixed to the sides of the sliding panels, which compensate for expansion and contraction during climatic changes. By means of these tightly fitting doors the cases are rendered proof against dust, and by the application of rabbet with felt packing they are, when closed, as nearly air-tight as possible.

In the selection of the frame for the cases the dealer should exercise taste. Rosewood and mahogany are the most desirable and popular woods, though in many instances walnut, cherry or ebony is used to advantage. It is generally agreed that rosewood is the handsomest in appearance. A case framed with this material can be placed upon a counter of any wood, as rosewood harmonizes with any colored wood. In the Messrs. Smiths' cases the frames are glazed with English or French plate glass, with mirrors in the sliding doors. The glass is the most perfect made, and is without flaws. Goods placed within are seen to nearly as good advantage by the observer as though no glass were interposed. The hardware is finished in silver, nickel plate or bronze. It will thus be seen that these cases are ornamental as well as serviceable.

As previously stated, a desirable quality would be absence of all molding. The manufacturers under consideration, appreciating this desire, are now regularly constructing cases with frames as small as $\frac{3}{16}$ of an inch in diameter, which presents the cases to the view as entirely of glass.



Plan C.



Plan D.

For the display of diamonds and the precious stones the most desirable case is that known as the London or circular front case. In this the glass is of one piece, bent from the top of the frame at the back to the base of the case in front. The glass, being in a single light and requiring no cross supports, no shadows fall within the case to mar the brilliancy of the gems.

Wall cases for the display of silverware, clocks, bronzes, bric-a-brac, cut glass, pottery, etc., should obviously be glazed with plate glass, and should not be cut up by cross supports. The framing should be bright finished and delicate. The broader the glass and the less the framing the greater the effect. A single plate sash case of twelve feet is about the largest made. They should be dust-tight, and should be lined with material harmonizing in color with the articles contained within. The manner of the employment of shelves depends upon the articles to be displayed. For the exhibition of silverware, bronzes and bric-a-brac, adjustable shelves, stepped up, are used to good purpose. Pavilions are to be desired when space permits. Perpendicular sliding doors are preferable, horizontal sliding doors being used only when the head room is insufficient for the former. In center cases the most convenient size is up to ten feet in length and about four feet in width.

Where there is a large space between two show windows and the door a case, should be placed, as it lends good effect and often attracts the attention of pedestrians, if well fitted, more than the windows themselves. For the same reason outside cases should be employed wherever possible.

Furniture, such as tables, corner pieces, cabinets or stands for the display of art goods should themselves be works of art, the great principle underlying the attractive arrangement of these goods being harmony. The commonplace furniture, tables, chairs, etc., in a jewelry store should be delicate and artistic in design.

Obituary.

JOSEPH BOWDEN.

When the death of Joseph Bowden, founder of the firm of J. B. Bowden & Co, became known in the trade on Nov. 23, the numerous expressions of sorrow heard on all sides were sincere and heartfelt. Many had not heard the sad news, and did not learn it until the genial presence of the deceased's son, J. B. Bowden, was missed at the banquet of the Jewelers' Association. The deceased was one of the few surviving jewelers of the old school, and in his day was one of the pillars of the trade. The death occurred early in the morning of the 20th at Flushing, L. I. For some weeks previous



Mr. Bowden had been in failing health, but his condition improving his family apprehended no danger, and believed that within a few days he would return to business. On the night before his death he retired as usual, and displayed no symptoms of ill-health. In the early morning when it was nearing his customary time for rising, the room was entered, and he was found lying still in death, the cause being declared heart failure.

Joseph Bowden was born in New York City in 1822. He received a common school education, and at an early age was apprenticed to the jewelry trade in the factory of Arthur, Peckham & Rumrill, then at 17 John st. He was an industrious lad and he mastered the trade in all its artistic and mechanical branches. He became a perfectly skilled artisan, and after acquiring a general idea of business, his ambition led him to venture into the field as a manufacturer on his own account.

In 1849 he formed a partnership with S. F. Merritt, now of Springfield, Mass., and the new firm commenced operations in a small factory in Dey street. The partnership expiring at the end of the year by limitation Mr. Bowden continued alone. Success attending him, he was compelled to engage new quarters in Cortlandt street, whence he subsequently moved to 11 Maiden Lane. Joseph B., his son and present head of the house, was admitted to the firm as partner while at that place, and later M. L. The firm name was changed to J. B. Bowden & Co, under which title the house still exists. About fifteen years ago the deceased retired from active participation in the affairs of the concern, though it was his habit ever after to make daily visits to the office.

The career of the deceased gentleman was one unbroken record of unswerving probity and honesty. Perhaps it is scarcely possible for a human creature to fulfill more completely the Golden Rule than did he. The interest of others was his interest in life. He lived but for others. Extremely modest, his many acts of philantrophy were performed without the least display. This trait precluded all idea of accepting any official position in his community, though he was often solicited to do so. He was pleased to see others enjoy the honor, and contented himself with aiding any endeavor to produce good in the locality in which he resided. In his home life he was affectionate and generous. These characteristics made for him a wide circle of friends who regret his death with true sincerity, and THE CIRCULAR unites in offering its sympathy. He was a member of the Baptist Church of Flushing, L. I., and a Royal Arch Mason. A widow, three daughters and two sons survive him.

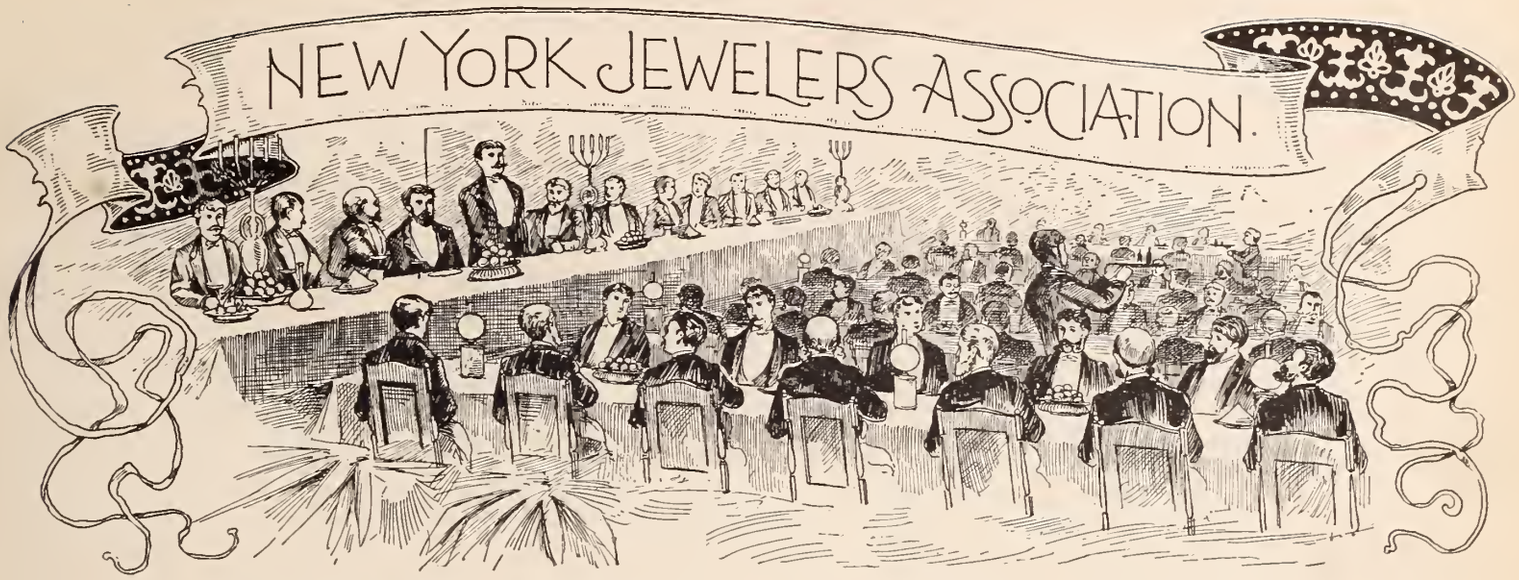
The funeral took place from the deceased's late home, Broadway, Flushing, L. I., at 1 o'clock P M., on Sunday, November 23d. Perhaps no less than 400 friends of the late gentleman from New York and other places saw the remains depart to their last resting place. Among these were H. N. Squire, W. S. Sexton, Geo. Richardson, S. C. Sammis, John Mount, C. G. Lewis, E. J. Scofield, John Horton, John Jarvis, Geo. Becks, Thomas Dobinson, Theo. Brower, Jos. Murray, Mr. King, A. K. P. Dennet, John H. Sutphin, Henry Clement and about sixty persons employed in the factory. H. N. Squire, S. C. Sammis, John Horton, John H. Sutphin, Henry Clement, Mr. King, A. K. P. Dennet and Jos. Murray were the pall bearers, and W. Frost, J. Smith, E. Kent, A. Britton, and Messrs. Gunkle and Fisher, gentlemen connected with the factory, and who had learned their trade with the deceased, acted as carriers. As an evidence of the regard in which Mr. Bowden was held by every one with whom he came in contact, the locomotives on the Long Island R R., at least such as are run by engineers who were acquainted with him, were draped on the morning of the funeral.

CYRUS C. HICKS.

Cyrus C. Hicks, who was fatally injured in the railroad accident on the Pennsylvania railroad near New Florence, Pa., on Friday morning, November 14, dying the Sunday following, had been traveling salesman for the firm of B. A. Ballou & Co., of Providence since 1880 The deceased was well and favorably known throughout the trade. He was the son of William Hicks, formerly of Richardson & Hicks, the old firm of manufacturing jewelers at the corner of Page and Friendship streets, and afterwards of the firm of Sackett, Potter & Hicks. He was born in Providence June 11, 1843, and was educated at the public schools. He had been a traveling salesman in the jewelry business for about eighteen years, off and on, having represented the manufacturing houses of Churchill & Chase, Manchester & Richards and H. De Witt Smith. By trade Mr. Hicks was a machinist, learning the trade of Brown & Sharpe, of Providence, and afterwards working for two years in the Burnside Rifle Works.

His employers speak of him in the highest terms, and consider that the firm has sustained a loss in his death which is almost irreparable. Among his fellow travelers he was deservedly popular, being of a cheerful disposition and always granting kindly counsel and advice to those of his associates that might be benefitted by his experience. He leaves a widow, an invalid, and a fifteen year old daughter.

The funeral was held from his late residence, 7 Hudson street, at 1:30 this afternoon, there being present the immediate relatives of the deceased, members of the Manufacturing Jewelers' Board of Trade, New England Jewelers' Association, Westminster Lodge of Odd Fellows, Ancient Order of United Workmen, Rhode Island Protective Travelers' Association, a delegation of New York associates of the deceased and visiting brethren from other places, and workmen of B. A Ballou & Co. Among the floral designs was a harp from the widow and daughter, a pillow from the brother, an anchor from Mr. and Mrs. James A. Blood, a large bouquet of roses from the M. L. A. Club, a unique representation of a grip sack from the Rhode Island Protective Travelers' Association, and the Three Links from Westminster Lodge. A specially beautiful floral piece was the tribute of about fifty of the New York colleagues of the deceased, It was very large, being about three feet in diameter, in the design known as the Henry Ward Beecher; the ground work was of ivy leaves, festooned with white roses, chrysanthemums, lilies of the valley and hyacinths, the whole being crowned by a white dove holding aloft a wreath.



Sixteenth Annual Dinner of the New York Jewelers' Association.

DELMONICO'S, NOVEMBER 20TH, 1890.

DID the New York Jewelers' Association accomplish nothing more than to bring together representative members of the trade into Delmonico's banquet room once a year, the organization would not exist in vain. Coming together in a social way and sitting at a common board, the manufacturing jewelers and their guests forget once a year, about business competition and real or imaginary grievances, and are led to see that men of the same calling in life can mingle together for other purposes than to effect a sale or purchase and talk "shop." Those who have attended any number of the sixteen annual banquets that have been given by the Association, will testify to the substantial good derived from the yearly dinner from a social standpoint as explained above, fully as well as physically and mentally because of the elaborate service of viands and wines given by the inimitable Delmonico and the intellectual feast afforded by the distinguished guests present year after year.

The Sixteenth Annual Dinner, held on Thursday evening, Nov. 20 last, was possibly the most successful of any of the previous ones in point of attendance and the eminence of the speakers The guests assembled in the parlors after 6.30 o'clock and shortly after 7 o'clock, filed into the banquet hall which never showed more brilliantly and looked more cheering. Strains of music from the orchestra in the gallery enlivened the entrance of the guests and members and dispensed popular airs during the course of the dinner.

A unique feature of the banquet was the table decorations. In years past, exquisite silver decorations on the tables from the salesrooms of Tiffany or the Gorham Manufacturing Company have gladdened the eyes of the guests of the association. Profuse bouquets and floral pieces from all climes and of various species, have served to relieve the rich silver decorations and give added contrast to the white table linen and delicate china. On this occasion, however, a special surprise was arranged. The silver decorations were naturally expected because of the past custom; but this year there was an entire absence of silver, other than the candelabra and epergnes furnished by Delmonico. There was also an absence of flowers and the tropical palms heretofore arranged about the sides of the rooms and the flags on the walls, familiar to those who have attended previous banquets of this association. The dinner was somewhat out of the ordinary therefore, in respect to decorations, for Delmonico had prepared a surprise in arranging a Thanksgiving or Harvest Home scene. Between the silver candelabra and epergnes, the tables were covered by a profusion of green and yellow, embracing all the vegetables of the calender. Huge pumpkins and squash, deep red beets, immense cabbages, Scotch kail, lettuce, onions, celery, carrots, cauliflower, and a variety of other substantial agricultural products, gave an autumnal appearance to the brilliant banquet room. The guests' table especially was profusely laden with these products of the field which hung down from the sides of the table facing the members and their guests. Forming center-pieces for all the tables were artistically designed sheaves of wheat interspersed with poppy flowers. It was admitted to be a radical departure for Delmonico and that it was welcomed because of the novelty, was evident from the references made to the effect by the different speakers during the evening.

Upwards of 200 men occupied the tables. The following is a complete list of those present at the guests' table, on the dias facing the other five tables:

The invited guests were Hon. Grover Cleveland, Hon. Noah Davis, Hon. Noah Brooks, Rev. Dr. John W. Brown, Hon. Stewart L. Woodford, Hon. A. Q. Keasby, E. T. Bartlett.

The members and their guests were as follows: Secretary P. T. Tunison, Theo. M. Woodland, E. E. Kipling, W. C. Kimball, H. E. Hastings, Albert Johnston, J. F. Perkins, Chas. N. Hancher, B. T. Schmauk, F. L. Archambault, John W. Senior, Chas. R. Porterfield, H. K. Dyer, R. N. Peterson, S. S. Wheeler, F. T. May, A. W. Sexton, W. L. Sexton, Geo. W. Shiebler, Leon Barre, Jas. H. Hart, J. Harvey Wattles, Jos. H. Crosby, Jr., N. H. White, Geo. A. Remington, O. M. Farrand, A. V. Huyler, M. De H. Mason, S. M. Schoonmaker, F. Beinhauer, G. L. Dillingham, A. D. King, Wm. H. Atwater, Augustus W. Atwater, C. M. Cram, N. W. Paterson, L. D. Cole, T. F. Fessenden, Hon. W. C. Wallace, N. Townsend Thayer, M. Z. Crane, David Kaiser, L. A. Piaget, J. M. Fuller, W. L. Rich, L. S. Lewis, B. H. Knapp, Spencer Baldwin, John A. Riley, O. R. W. Worm, I. G. Dillon, P. W. Taylor, Stanley A. Bryant, I. A. Lewis, Henry F. Quast, Robert S. Ferguson, Alex. C. Chase, Ludwig Nissen W. R. Alling, W. H. Curtis, Chas. Hansel, Frank M. Welch, G. Henry Bailey, S. S. Battin, Leroy Fairchild, Geo H. Richards, Jr., Geo. W. Biggs, H. S. Cozzens, John D. Alling, B. Seckle, John Rourke, Jr., Mr. Riddall, Z. Q. Pequignot, S. Cottle, C. E. Bride, F. W. Hoyt, E. S. Johnson, Jr., J. G. Bacon, J. G. C. Cottier, John A. Mount, Col. Sheafer, John R. Greason, James P. Snow, H. C. Ostrander, A. A. Webster, Wm. H. Hennegen, D. F. S. Forshay, Chas. Diesinger, Chas. S. Power, O. A. Drinkwater, Aaron Carter, Jr., Augustus K. Sloan, C. E. Hastings, George R. Howe, Wm. T. Carter, James S. Franklin, Jos. T. Bailey, Clement Weaver, Gen. Geo. H. Ford, Geo. B. Jaques, Robert C. Black, Alexander Lelong, W. L. De Voursney, Charles J. Degarre, Isaac Champenois, Louis Lelong, C. G. Alford, Geo. M. Hard, H. P. Doremus, E. V. Clergue, T. K. Benton, Wm. Riker Jr., H. C. Hardy, Henry E. Ide, John J. Heiser, A. T. Hubbard, E. B. McClelland, N. Geoffroy, E. P. Hutton, Herman Unger, Eugene Unger, W. E. Bidwell, George C. Plume, Wm. H. Jones, J. B. Wood, E. E. Wood, W. C. Bryant, Henry Hayes, Hayden H. Butts, C. Wesley Harmon, F. E. Parsons, Walter N. Walker, James W. Appleton, F. A. Smith, William Ginnel, A. L. Brown, Stephen Avery, P. K. Hills, Jr., Irving Smith, A. M. Crommelin, J. S. McDonald, W. W. Hayden, E. M. Douglass, John N. Taylor, J. A. Lebknecher, Geo. Krementz, Mr. Mattison, W. G. Blair, J. H. Shafer, F. S. Douglas, Dr. F. B. Mandeville, A. O. Headley, Steele F. Roberts, L. Furtwangler, John L. Shepard, Alfred H. Smith, Harrison B. Smith, S. Charles Welch, John Mason, Edgar G. Young, Chas. Bangs, E. S. N. Perkins, Jr., Fleming Smith, J. P. Harper, J. W. Beacham, Abram Unkles, F. H. Bawo, A. Bigelow, W. P. Shreve, Chas. Bailey, E. A. Newell, A. Dominick, Isaac Mills, L. B. Haff, Rev. Geo. F. Flichtner, H. B. Dominick, B. Drake Smith, James C. Aikin, C. Bogardus, L. J. Mulford of THE JEWELERS' CIRCULAR.

Henry E. Ide, President of the association, presided. At his right sat Hon. Grover Cleveland, next to him Rev. D. J. W. Brown, Mr. E. T. Bartlett, and Mr. E. J. Scofield, President of the New York Jewelers' Board of Trade. On the left of the president sat Hon. Stuart L. Woodford, Hon. Noah Davis, Hon. A. Q. Keasby and Hon. Noah Brooks in the order mentioned.

After the banquet had progressed to that stage when it is signified that the last edibles have been served by the passing of coffees and cigars. President Ide rapped the company to order and addressed them as follows:

The *cuisinier* was particularly feliticious on this occasion, and the menu offered the diners was in the highest style of the most famous boniface in the world.

MENU.

Huîtres

Potages

Consommé àla royale — Bisque de homard

Hors d'oeuvre

Timbales renaissance

Poisson

Aiguillettes de bass à la vénitienne

Pommes de terre, duchesse

Relevé

Filets de boeuf aux champignons.

Tomates au gratin

Entrées

Dindonneaux braisés à viennaise

Petits pois au beurre

Côtelettes de ris de veau, parisienne

Haricots verts sautés

Sorbet: Régence

Rôts

Perdreaux garnis de mauviettes

Froid

Terrines des foies-gras à la gelée — Salade de laitue

Entremets de douceur

Croûtes aux ananas

Gelée aux pistaches, orientale — Gaufres à la crème

Pièces montées

Glaces: Fantaisies

Fruits — Fromage — Café

Vins

Graves — Champagne — Pontet Canet

Mâcon vieux — Apollinaris — Liqueurs

Jeudi le 20 Novembre, 1890

DELMONICOS.

ADDRESS OF MR. HENRY E. IDE.

Gentlemen and Guests of the New York Jewelers' Association: It is now my privilege, as the President of the New York Jewelers' Association, to express the great pleasure it gives us to see so many of our friends here this evening, and it will give you all great satisfaction to know that what I have to say will be put in a very few words, for I will not long detain you from listening to these gentlemen on my right and left. We approached this sixteenth annual banquet as an association with much to encourage us. Our membership is constantly increasing, and we are growing in usefulness and in strength from year to year. There is nothing in the existence of an organization of this kind to shake our faith in our fellowmen. Personally, I believe very strongly in the integrity of merchants as a class. [Applause.] I have not by any means lost my faith in human nature. I also believe that the annals of the jewelry trade will make no unfavorable comparison with those of other mercantile pursuits as regards honesty and integrity. The best merchant is the one that looks well to his credit, and by so doing protects not only himself but the interests of his customers. Many of you gentlemen who are guests at this time would be saved much unfair and unjust competition were all your creditors combined in an association like this, and if no credit were accepted except after careful investigation through its channels. One of the greatest pleasures in mercantile life is that following a good sale made to a house in good standing. But next to and greater than that is the pleasure derived when these mercantile and business relations develop and ripen into friendship, and the man that is your trusted customer becomes your true and valued friend. [Applause.]

And so, I say to our guests this evening, these are the circumstances under which we welcome you. We welcome you as men associated with us in this Board, but above and beyond this we welcome you as friends whom we are always glad to meet in this social way. May the years that are to come to each of you be bright and prosperous ones, and may we all unite in efforts to elevate this trade of ours by combined opposition to all dishonesty and united effort toward all that makes honorable and honest business careers. [Applause.]

The President then continued: We meet to-night as members of the jewelry trade, but back of all that we meet as loyal American citizens. Let us rise and drink to the health of the President of the United States.

After this toast was drunk standing, the President continued: The next toast, gentlemen, which we propose is—

"*Our Country: however amended or described, be the measurements more or less, still our country to be cherished in our hearts, to be defended by all our hands.*"

I have the honor to call upon the Hon. Grover Cleveland to respond to this toast. [Prolonged applause and three cheers for ex-President Cleveland.]

Mr. Cleveland responded as follows:

ADDRESS OF THE HON. GROVER CLEVELAND.

Mr. President and Gentlemen of the New York Jewelers' Association: The sentiment assigned to me to-night suggests a theme so vast and so animated that I feel much embarrassment in attempting to deal with it. You, of course, do not exact me on this occasion to give voice to the thoughts and the feelings which the mention of "Our Country" inspires. If I should do so I should merely tax your time and patience by giving expression to the reflections which are spontaneously in the minds of all of you. Besides, if I should launch upon this subject in true American style I know I could not avoid the difficulty of making a Fourth of July speech late in the month of November. I hasten to assure you that I do not fight shy of my subject because I do not love it. On the contrary, I love it so well that I am anxious to observe every propriety belonging to it, and I could not rid myself of the idea that the American Eagle soars higher and better in the warm days of July than in the cool atmosphere of this season. (Laughter.) And yet I am far from believing that at any time or in any assemblage of Americans the sentiment "Our Country" is not one proper to be proposed, though I sometimes think that it speaks so eloquently for itself that it needs no advocate or interpreter. And I am not afraid that anybody—there is not the least danger that any of us—will forget what we have accomplished as a nation and what we propose to accomplish, or that we will fix within too narrow limits the growth, prosperity and greatness of "Our Country." It seems, then, absolutely necessary that our enthusiasm should be aroused on this subject. Sometimes those who, unfortunately, cannot call this country theirs, accuse us of indulging in our glorification with some exaggeration. But every American understands perfectly well that such imputations as these arise either from ignorance or envy or disappointed rivalry. At all events, we are in the habit of glorifying our country and we propose to continue it. We do it without prompting, and we like it; and however much others may find fault with it we know, and we propose to declare on every occasion, that America is the greatest, freest and best country on the face of the globe. [Applause.] And this is not an original proposition of mine (laughter); it has been a settled fact in the American mind for a great many years.

This thought would seem to cover the thought allotted to me, and would seem to be a "short cut" to a disposition of it. And yet this disposition to glorify our country is strong in me, and I am disinclined to let go my allotted sentiment in quite so summary a manner.

I know no better way to deal with it than to divide it and to consider a part or branch of my toast, as is sometimes done by clergymen in considering their texts in the pulpit. Therefore, I would be glad to say something about the word "our" as it is related to "Our Country." This country is ours because the people have used it; because they rule it; because they have developed it; because they have fought for it; because they love it; and yet every generation of Americans holds and possesses "Our Country" only in trust for those who come after them, and they are charged with the obligation of transmitting it to others as strong and sound as when they received it. Our country is not ours to destroy; it is not ours to sell; it is not ours to neglect and injure. Our country is ours as our homes and families are ours; and as our churches and schools are ours—to protect, to defend, to foster, and to improve. [Applause.]

Because its strength and its ability to reach its promised destiny depends upon its unity, one of our important duties toward it is to cultivate and encourage friendliness among our people, so that all may heartily co-operate in performing the terms of our trust. As it exists for all of us, all should be equally entitled to its benefits. If we allow ourselves to be influenced by grasping selfishness in the care of this trust of ours, we should be untrue to our obligations and our covenants as Americans.

This country is ours for the purpose of securing through its means the prosperity and the welfare of all, not for the purpose of promoting the interests of the selfish and the designing, who desire to be enriched through the impoverishment of their confiding fellow-countrymen. It follows, then, that we should defend and protect our country against that selfishness, which if permitted, will surely undermine it; and it is our duty to do so as clearly as it is our duty to defend it against armed enemies. Nor are our obligations as trustees of our country fully answered when we preserve it in the same condition that we receive it. The march of civilization and progress throughout the world imposes on us the duty of meeting the subject of our trust so that we may transmit it to others in such an advanced state of progress and of growth as will testify to our faithfulness and our devotion to its interests. The man who hid his talent in a napkin and added nothing to it was condemned as unfaithful when called upon to give an account of his stewardship.

Let us then rejoice in the greatness of our country; but let us remember that it will be our blame if it is not greater; let us boast of this country which we call "ours," but let our boast be tempered with the reflection that it is burdened with a sacred trust, and let us always be mindful that, though for a time we possess it to patriotically use and transmit it to the generations that shall follow, our relations with it should be made serious by the fact that in its broadest and most solemn meaning, our country is something which, as an example and interpretation of freedom, belongs to the world; and which, in its blessed mission, belongs to humanity. [Applause.]

President Ide—Gentlemen, let me propose as the next toast:

"*Honesty and integrity. The true basis of successful trades; cor-*

ruption wins not more than honesty; be just and fear not."—Henry VIII.

I would call upon the Rev. Dr. Brown, of St. Thomas's, New York, to speak to this toast.

Dr. Brown responded as follows:

ADDRESS OF REV. D. J. W. BROWN.

Mr. President and Gentlemen of the New York Jewelers' Association: I have two very happy illustrations of the subject. First, in the President of the association, who has taken my text and has already given you a part of my sermon; and I am sure, though this is my first opportunity to meet him, that I voice the sentiment of this association when I say that in your President is the happiest confirmation of the toast he has proposed. Honesty does not only belong to trade. Honesty belongs to every department of life. There is honest fellowship; there are honest ties in every relationship of life; there is honest government, and he who has just spoken beautifully illustrated it. [Applause.] But when we come to speak of the matter pertaining to your immediate duties in your relationship to your fellowmen, to the avenues of trade, I am sure, gentlemen, that you need no sermon upon it. It is an old saying that "Honesty is the best policy"; if honesty is policy, then it is not a virtue. The virtue lies behind the exposition of its practical results. If honesty is a policy, then the policy easiest had and the policy of this day is to be dishonest. I am very sure that the man who does not understand Plato's definition of honesty is not fit to engage in the trades of honest men. "Honesty," he said, "is to be honest when there is an opportunity to be dishonest and when there is no possibility of detection." And a man, therefore, that has the principle lying in his heart rather than in his head, and the integrity which is carved out of character, I believe is what you gentlemen properly esteem and daily practice. I read the other day in one of the neighboring cities of a workman who had taken from his employer a portion of the gold which was to enter into the manufacture of watches, and this man substituted an inferior metal for the gold, and it was discovered that the product as shipped went out as not properly represented. This man in doing this act did not only take the gold; he also took the character of the establishment away, and when he had taken the character of the establishment he caused a loss to the community in which the manufactory existed, and to the whole United States wherein the goods are sold. This is a fit exposition of the character which enters into the relations with our fellowmen. Character is not created by circumstances. From it comes the circumstance, and we are to fill the niche in the circumstance. Then let us say, as the Lord said: "Take up thy bed and walk," and we must take up our circumstances and make them contribute to the development of character. Be honest to yourself. When a man stands up with that consciousness of integrity of what is right and what is true, knowing that he measures himself not by any fellow man, but by his own conscience and knowledge of right, that man can go into any avenue of trade. I tell you, gentlemen, that we all need these graces in this day, If we are to attain success, let it be the success of integrity. If it is to be failure, let it be the failure of honesty and the failure of integrity. But I need not preach a sermon to you, as I am told I am to be followed by one who illustrates always what I say in the different departments of life very aptly, and who will treat his subject ably and will discourse on a theme which places the circumstances of this world on a higher plane, fitly representing the purity of the sentiments on which I have dwelt. I wish you Godspeed as an association. [Applause.]

President Ide: Dr. Brown has very kindly led you to anticipate the next toast, which is—

"*The Ladies: He that will this health deny,*
Down with the dead men let him lie."

I call upon Gen. Woodford.

Gen. Woodford replied as follows:

ADDRESS OF HON. STEWART L. WOODFORD.

Mr. President and Gentlemen of the New York Jewelers' Association: I have often wondered why the toast to woman should be the last at the usual banquet. Being an old married man, I have come to the conclusion the toast to woman is usually put at the rear so that when you go home you may tell your wives and daughters that you staid out late to drink their healths. But why it should be so near the front at a jewe'ers' banquet I can readily understand. My family is all feminine, and my friend Hart, when he met me here to-night, said: "Well, Woodford, your family is back to New York. They were in my store to-day." (Laughter.) When I reflect on the hard times in Wall street, where my office is, you can imagine my sorrow to hear that they had wandered there,

Coming into this banquet hall to-night, I, with you all, appreciated the beautiful Thanksgiving feast. The sheaves of wheat with poppy flowers were upon the tables, with the pumpkins, the cabbages, the turnips and beets—I am sorry that all the "beets" are at the guests' table. (Laughter.) Everything offered the profoundest suggestion of the coming Thankgiving. When I looked at my friend, Mr. Cleveland, I remembered that it was so soon after the 5th of November. and I could understand why Mr. Cleveland felt like Thanksgiving; but as a good and loyal Republican I was looking round for the sack cloth and ashes. Your President, who illustrates the opposite of the "Ides of November," tells me that there are twenty-three karats in pure gold, twenty-two in that which is stamped by the Government, eighteen in wedding jewelry, and how much in the rest you gentlemen can tell better than I. Your speaker is an old man. You all observe that, if you look at him. He left his spectacles at home. He wanted to read about the menu, to see the beautiful things we have had to eat, and so he borrowed Mr. Cleveland's, and the letters at once became large and rosy and made one feel hopeful of the future. Smiles came from every line that met my eye. It did not make my Republican heart feel good, and I gave him back the glasses. I went down to the table, and I saw Mr. Hard, of the Chatham Bank, and Mr. Perkins, of the Importers' and Traders'. I asked Mr. Perkins for his glasses, and at once, through the spectacles of a banker, the letters grew small and the inscription dim, and so I passed Mr. Perkins' spectacles back to him. I have had the spectacles of the statesman. I have had the spectacles of the banker. I do not dare at this early hour to take the spectacles of the wife, and I borrowed these that I am using from a business man. I looked through them and I want to congratulate the business man, the railroad man, the lawyer, the statesman and the public of this great city of New York that for the last week New York has not lost her head from her trials. I do not know that free trade has transferred the centre of the business of the world to London, but I do know that London and England are oppressing the world over—with investments in Tasmania and the Mountains of the Moon; with investments of Argentine and the Isles of the Sea and all over the world; that all the trouble of the financial world of to-day is because London is calling. And I have to think of those wondrous and earnest and wise words of your guest. Mr. Cleveland—our country is so strong that New York and the United States to-day are taking every dollar of securities that are forced back upon us, and we have the money to take them at their present value; that all that we have loaned is loaned within the United States; that the security is within our grasp, and that the government of the security is under our control; that to-day every kind of American railway is earning interest upon its securities; that to-day the great United States is answering to every call, and if we are strong to-day it is merely because, as Dr. Brown has said, that we tried to be honest; and if we are to be strong in the future it is because we are to be honest.

And I was thinking—my Buffalo friends will appreciate it—the most wonderful thing about Buffalo is its elevators (laughter), for we have Buffalo statesmanship to elevate politics and Buffalo clergy to elevate morals, for they are both Buffalo men who have spoken to you. Above all that, we have American industry, American honesty, American thrift and American faith to guarantee, to assure, to demonstrate the possibilities of the future.

Now, I said some years ago at a banquet of the Chamber of Commerce that I believed that the year 1900 would see the financial centre of the world in the city of New York. I was young then, and may have been ten, fifteen or twenty years ahead of my time. I am older now and I believe as earnestly, as reverently as I did then that the march of all the ages is bearing and centering toward this continent, and that just as Amsterdam took the financial supremacy of the world away from Venice, just as London took the commercial and financial supremacy of the world away from Amsterdam, just so certain, and before the youngest of the men at this board have grown old, the financial and commercial centre of the world will be here, and we shall give law of money as well as law of liberty to the entire civilized and business world. [Applause.]

It has been my fortune to cross the ocean a good many times. Do not understand by that remark that I have come to a good many of these dinners and got half seas over. But "old salt" I have crossed a good many times, and I remember a certain ship commander, whose name I need not mention here, but with whom I have sailed often, and about whom a friend told me a story, since which I have admired him even more than I ever did before. My friend was standing on the bridge where the good captain always stands in time of storm or fog, and about the vessel a mist had closed everything from sight. My friend was permitted to be with the captain. In one of those strange, mysterious lifts of the fog that sometimes come at sea, in the darkness and the storm, the mist lifted, and right upon the larboard bow there appeared a brigantine bearing down on the great steamer. My friend said that not a quiver crossed that captain's face, but quick as the mist lifted, he raised his hand and touched a button. Right onward went the great steamer. Right onward came the square-rigged vessel. Close to and obedient to the touch of the button and the swerve of helm, and the great ship swerved and the brigantine went by with her yards torn off, so close was the passage. Then the captain turned to my friend and said "many such experiences would make my hair white." Right into such a storm New York came within this last week. No prescience could have foretold, no wisdom could have averted the coming of the trial. The fog lifted and the threatened panic was upon us. The nerve of the bankers, the conscience of our business men, and the hand flew out to the button and we have gone by, and thank God that the old craft of American honor and American finance—our boast of honor—and we are going through, because American merchants and American bankers mean to do what is right. [Applause.]

But my friend, Mr. Ide, pulls my coat tails and says, "Where are the ladies?" One of the sweetest of them spoke through her husband to-night. One of the best of them has spoken through Dr. Brown. I can only say this, and I look right into your own hearts: Jewels may flash and the cunning craft of the jeweler may witch—and there is none of them that does not love to be decked and jeweled and crowned when the hand of honest love offers the jewel and gives the crown—but there is not a man at this table to-night but knows that were stress of fortune to come into any of our homes, that wife and daughter and woman would give up the expenditure and lay by the jewel and keep honor just as true and just as firmly and just as sweetly as would any of us. I can say for woman to-night only this: Think of your mother; think of your sister; think of the cradle; think of the hours of childhood and playmates; think of her who was angel at the beginning; dream of death; think of her who will be last at the pillow and whose prayer will waft you at the last toward the better land, and reverently thank God that we have mothers, that we have wives, that our daughters will go into the future bearing toward the next generation the sweetness and the blessing, the trust and the promise of the life that we live to-day. Good night. [Applause.]

President Ide announced the next toast:

The Bench and the Bar:—"The law is a sort of hocus pocus science that smiles in your face while it picks your pocket, and the glorious uncertainty of it is of more use to its professors than the justice of it."

This was the sentiment of a writer in the last century. Happily in this day the law has too many able defenders for us to accept this view, and I have the honor of calling on one of these advocates, who is known to us all, Hon. Noah Davis.

Ex-judge Davis responded as follows:

ADDRESS OF HON. NOAH DAVIS.

Mr. President and Gentlemen of the New York Jewelers' Association: The fallacy of the sentiment has already been proved by your President himself, for he has called to address you this evening three lawyers to one clergyman. [Laughter.]

Could any further proof be needed before such an audience as this, it is that the old scoundrel who wrote this libel upon law and lawyers was himself a lawyer without a client.

"The Bench and the Bar" has been given me as a toast before. I think I have been called upon to speak for that toast before this body so often that you must feel like a sheriff's jury, to have the law explained to you by me annually on this occasion. I have been here to your dinners from the first given by this association to the present. In the last few I have always been introduced as your Godfather, but do I look like a mayor? [Laughter.] Are you "crokers?" [Continued laughter.] Not after hearing my friend's speech who spoke so eloquently for the ladies, and who had so much trouble with the glasses that he borrowed from the ex-President and the president of the bank and the merchant. He left us immediately afterward because he knew I would expose his little humbug. It was not the glasses that he looked through that troubled him, but the glasses that he emptied, and here they all stand in array as witnesses against him. He forgot his toast and he confounded the ladies—the most charming subject that could have been given to order—he confounded them with the embarrassments of finance, with the trouble of bankers and brokers and all other men who deal in stocks and carry the country into Wall street. So he forgot that he was to speak for "The Ladies," for he could speak in tones vastly more eloquent than those he uttered, if he chose. But I am to speak of "The Bench and The Bar," and I am falling into the same error.

First, The Bench. That, gentlemen, is an institution created under the constitution of our state and country, but principally in this city for the purpose of appointing receivers [Laughter] and issuing injunctions, and occasionally trying criminals. That they have performed their duty well nobody should gainsay.

Next, my attention is to The Bar: There is a subject worthy of Depew. I ought to know something about the Bar. I kept them in order for about thirty years before I found myself at the bar with all the bars let down. But I will illustrate that the bar is worthy of respect and confidence and by a single anecdote and it is true: Many years ago, I think somewhat more than twenty, I was presiding justice of the Supreme Court in the Eighth District in this State. Our General Terms were held in the City of Buffalo. As such Presiding Justice, one day a stalwart, good-looking, intelligent, and worthy young man, whom I knew well as a clerk in the office of a distant firm, came before the bench and I had the honor to admit him into the profession. Well, he entered upon his practice in a quiet way, performing all its functions and duties to the satisfaction of himself, I hope, and surely to his friends. But in the course of progress, after I had come to this city, I learned that his fellow-citizens had made Grover Cleveland, Mayor of that flourishing and beautiful city. [Applause.] And from that post of honor in which he discharged his duties in a manner that attracted attention to the Mayor of Buffalo from all the press and the eyes of intelligent men throughout the country, he presently was made by the choice of the people, by an overwhelming verdict, the Governor of our great state. [Applause]. At the close of the service of that term, he became by the choice and voice of the people, President of the United States. [Tremendous applause.] The highest office in the gift of man—Kings and Emperors claim to be the gift of God, but the President of the United States is represented as the highest office in the gift of man, and as God has given man the power, in this country at least, to select his own ruler, so is that office the highest gift of man, sanctioned and crowned by the blessing of God. And after four years of service in that office, distinguishing himself by integrity of purpose and by calm and close pursuit of what he regarded to be its dutics, he left to give place to another; but not retiring as too dignified by having borne the mantle of Washington and his followers—not to live a life of idyllic ease; not to a place of rest from the pursuit and avocations of life; but to come here to this city to become an honored member of its bar—as one of the members of the bar of the city of New York. And hence I say the bar is a place of honor. A well-conducted and an honest bar may well receive the highest commendation of all classes of men, and although it has been said—it is almost said in your toast—that an honest lawyer is the hardest work of God [Laughter], yet the truth is that an honest lawyer, one who truly carries out in obedience to the duties of the law the great purpose, the true object which it imposes upon him as his duty, the defense of right, the support of innocence, the preservation of justice—I say that such a man, an honest lawyer is the noblest work of God. [Applause],

I have proved that the bar when rightly followed, rightly pursued, is a calling to which even Presidents may resort without depreciating dignity or lessening honors which are justly their due. But this toast says that "the law is a sort of hocus pocus science, that smiles in your face while it picks your pocket." I have been at the law since I left the bench nearly four years ago; and in that time I have not seen one of your faces in my office, at No. 2 Wall Street, and therefore I deny that I have picked your pocket and I challenge proof of your President that you have not walked your own course serenely so far as I am concerned. I have defended my humble profession.

When I came into this room, and I have been here several times before, and I have seen it gaudily decorated with beautiful flowers, but never saw it as I see it to-night, as the Garden of Eden; I have looked with wonderment upon these vegetables. This is magnificent, and there is much to instruct the student in the worlds evolution here, because such a spectacle as this brings us back to what may be called the primary formation. It does not call to mind the brilliancy of service; it does not enter the gaudy territory of flowers; but it goes down to the substantial products of Mother Earth that fill the stomach, feeding man and strengthening honest labor and enabling us to earn our living by the sweat of our brow. In fact, we have everything here, You call for a flower, here is the "caul" [pointing to the cauliflower]. You reach for an onion and you get bit by what must touch the very soul of every jeweler present—touch the foundation of your pride of profession, that which you all have in mind who desire to get rich, and when rich you centre all your ideas upon for future prosperity—you have here so many carrots [Laughter]. I have looked upon this variety and I have made up my mind that this is a great country, and as a country it would be hard to "beat" it by any other. It cannot be surpassed by this exhibition, and I do not think any other part of the world outside of Delmonicos could show it. This is an advertisement of Delmonicos showing you the genuine raw article, but when he cooks it, the devil himself cannot tell what it is.

Now gentlemen, I bid you good-night, but I want to add one single sentence. I am sorry Depew is not here I would like to see another tussle between his excellency and Depew in nominating each other for the next presidency. That which we saw the other day was most excellent as illustrating the practice which we have noticed in our politics, that every man who wants to be president nominates himself by declining a second term. It is as sure a sign as the bow of heaven—and when Depew a few years ago in Chicago made that grand speech about the second term, I knew he was aware of what he was doing, for none of you ever heard an unfavorable candidate who defends the first term, speak against the second term. [Laughter and applause].

The President: Gentlemen, let me propose the health of, "*The Press:*" *The reflector of public opinion:*

The Hon. Noah Brooks will answer to this toast.

Mr. Brooks said:

ADDRESS OF HON. NOAH BROOKS.

Mr. President and Gentlemen of the Jewelers Association: I feel very much at home here, partly because I have been frequently your guest and partly because I see in this promiscuous assemblage before me so many of my friends.

There was, many years ago, a gentleman who lectured in the vicinity of Athens—not the modern Athens of Massachusetts—whose name was Socrates, and when he could teach in a grove, he lectured on the kingly senate or matters germane to the country. Sometimes he had a thin audience, though they did not pay anything, and I suppose that is the reason why the audience was thin. On one occasion when he saw that his audience was composed exclusively of one man—Alcibiades—who used to spend his nights out late until past midnight, and who was looking solemn-like and holding on to a tree watching for one of the benches to come around to sit down on. Socrates was said to have said, "I see before me the better part of Athens."

In looking over this kingly, intelligent assemblage I see before me the kingly part and better part of Newark on the other side of the Passaic beyond the Hudson River which leads the van of all you cockneys of New York in preparing the masses.

Brooklyn is said to be the bed-chamber of New York, where you go to sleep. Newark is the place which is called the work-shop of New York, where you go to make your jewelry, and therefore when I come to you to-night and give you greeting, I come as one from the work-shop and bid you a pleasant greeting because we make in Newark the jewelry you sell in New York. And if I were to propose any toast to-night that I am sure would meet with your cordial approval, it would be: The City of Newark; situated in the midst of a foreign country, but bearing domestic relations to the City of New York. We have there a very great city. We lack nothing but water and good society; and water we are going to have. We haven't it now because the only use we make of water is treating it as raw material for the breweries, and we kill the bugs by boiling them in the brewery.

Many years ago, on the coast of Maine where I was born and bred, was a man whose interior economy had been long deluged by much rum and whose complexion was painted by it a brilliant crimson color. He said to his employer—having heard a temperance lecture the night before—"After this, no more rum for Bill Ledyard; no more rum; nothing but clear, cold water right from the spring, but with just a little drop of rum to kill the bugs." And we in Newark, as I have said, kill the bugs by boiling the water in the brewery. [Laughter.] Hence the industry, the zeal, the brains and the mechanical ingenuity which Newark contributes to New York.

Naturally, this subject of temperance, of course, holds more attraction for my friend on my right—Brother Noah—who is the subject of a verse written by a German poet, something like this:

"This to the Lord Noah said:
The water now tastes very bad,
Because you have lately drowned therein
Mankind and beasts and all their sins.
Therefore, Oh, Lord, I really think,
I would prefer some other drink."

And if my learned temperance friend and Brother Noah has not found to-night some other drink, it is not your fault, because Delmonico affords everything in the drink catagory that one can need.

But I am reminded that I was to speak to the press. We are accused by our English friends and by other foreign countries of having unbridled liberty. The liberty of the newspapers is due to the mercurial habits of the American. We are more or less sober, and when the Mayor of Newark at a late dinner said we used twenty-two million gallons of water per diem in Newark, I asked him what became of that water? I was sure the press had not consumed any of it, and I know the Mayor had not; but, as I say, the press is accused of liberty, and although our glee may be at the time more or less ghoulish. I am sure it is not in any way interested in politics. Indeed, the Republican paper I have the pleasure of conducting has shown more liberty since the election than before. Another accusation brought against us is that we know too much. No newspaper knows too much. It does not know what you think it knows. Then what makes you think we know too much? I see you see the point. It is not the newspaper knows too much, or any more than you do; but because the newspaper is forty or fifty single gentlemen rolled into one.

The insincerity of the press is sometimes commented upon because we always go in for having a good time. Just before the election, I was talking with a friend of mine—a very good friend—who is editor of a Mugwump newspaper of New York, and he said: "I don't care who is elected, but anyway, whoever is elected will not interfere with our having a good time and lots of fun over it," and that is the true spirit of journalism. The journalist has a good time every day. What appears in the morning, before night is utterly forgotten, and it is not necessary for any of you to know. What we have said a month or six months ago is blotted out entirely, and we only ask you to judge by what we say to-day, not by what we said yesterday.

And then another accusation that is brought against the press is that it is gossipy; that it is too much given to telling unpleasant things. Now, when I consider the newspaper, and that it is a perfect reflection and image of the times, I am surprised that it is as good as it is. We do not pretend to be any better, at least not much better than you are. We are average men And when I think how good a thing, financially, it would be for some newspaper to start in the city of New York and publish as bad a paper as could be and tell all the follies as they arise and to repeat all the cases of crime, and to think that nobody does it, I am suprised at our virtue.

Then again, it is said of us that we are disposed to arrogate to ourselves a great deal of learning. Well now, in the newspaper business, some little training is

necessary. A jeweller would not consider anybody in his employment competent to take a position at the bench or at the lathe unless he had training beforehand. Why even a plumber is supposed to know something.

A man off the coast of Maine who goes into the captaincy of a vessel with the proper training is supposed to have climbed in through the hawsehold, whereas a man who owes his promotion not to civil service is said to have climbed in through the cabin window. A man in journalism who goes into the newspaper business without previous training and puts his money into the paper, may print very nice things in his paper, but he is nothing but a newspaper manufacturer; whereas a man who is a real editor and a real journalist has come up from the bottom of the ladder always. And so he is a true journalist and true leader and reflector of public opinion, and is not a charletan. The men who have led journalism in this country are the men who have started from the lowest rounds; and the newspaper in the hands of such men is to you and I as the air we breathe. Conceive, if you can, a day, a morning, beginning without a newspaper; a day beginning without a full report of the Jewelers' Dinner at Delmonico's; a day beginning without a full report of your speeches last night; a day beginning without a report of the proceedings in Congress. Such a day would be nothing. And when all earthly shapes shall mingle in the gloom and Campbell's vision of The Last Time shall be realized and somebody will stand on the ruined arches of the New York Acqueduct, or the Brooklyn Bridge, and as the last man shall look upon the chaos that shall come and shall see that all the world has vanished, that man will be the newspaper reporter, preparing his report for the newspaper that shall never come out. After Brother Noah, the deluge [laughter and applause].

President Ide: It is not very often, gentlemen, that we have so many men from ouside the United States, from New Jersey; but we have still a man from this foreign country. I will call upon my friend, Mr. Keasby, to respond to the toast of:

"*Our Guests.*"

Mr. Keasby spoke as follows:

ADDRESS OF HON. A. Q. KEASBY.

Mr. President and Gentlemen of the New York Jewelers' Association: I have not been able to borrow any spectacles from anybody and it would have been of no use, because I have had no opportunity of seeing or handling the programme of subjects, and I am just informed to what I am to respond—"Our Guests." To give a biography of these gentlemen and the guests on this occasion is wholly beyond my power, but it is enough that they have entertained you here to-night. Am I to paint their lives and their characters and to describe their services which they have rendered to the State and the country? If that were my task, what a task it would be? I should have to tell you the history of this country and to trace the administration of one of its Presidents and possibly look into the future of another. I would have to explain to you all the services that have been rendered by that great body, the Bar, which has been already so clearly and cleverly put to you by my friend Judge Davis. I should have to show you what they have done and what they are and how honest they can be. I would feel perhaps in the discharge of that duty something as old Ben Johnson felt when he was traveling in the north of England once and he came to a place where there was a great funeral, and all the people had turned out to do honor to the distinguished deceased. He asked who he was, and was told that he was a lawyer. "What, all this great assemblage to do honor to a lawyer?" and then he continued, "God works a wonder. Now it is, "Here still *lies* a lawyer, an honest man." It would be my task also to declare to you what has been done by the great dignitaries of the Church, and so I would have to cover the whole range of human action. I despair of doing justice to that. Our guests spoke for themselves. I feel that with regard to them I should be obliged to say, as once I remember many years ago hearing a great orator say, some words that electrified a convention at which a nomination was made for the presidency of the United States. It was adopted as a rule of the convention that no one should speak in eulogy of any individual. I refer to the address made by Rufus Choate on that occasion when in the course of his speech he was interrupted by John Minor Potts, of Virginia, who claimed that he was trenching upon the rule in attempting to eulogize Webster. Choate replied, "What event must it be that that great man is not associated with? Of whom a man cannot speak at all in connection with the history of his country without his being charged with pronouncing his eulogy." And so I think if I were to attempt to describe to you the qualities, the opinions or power of those included under the term of "Our Guests" to-night, I would subject myself to the charge made against Rufus Choate on that occasion.

They say that I am another man from New Jersey. Suppose I speak a little more to you about New Jersey; a subject about which I know something. The difficulty about New Jersey is that she is a jewel with a setting, and a jewel that is illuminating the world from this western hemisphere. But the trouble with her is that while she is a jewel and a crown of glory, her setting is bad. We have placed her between New York and Pennsylvania—between the great cities of New York and Philadelphia.

I saw this summer, in walking along some of the by-streets of London, a little old book-shop, and looking in at the window, I saw a map—a very old map—of "Part of Her Majesty's possessions in North America." I entered and asked the price of that map and bought it for five shillings, and I found that it showed the central part of the United States as it was at that date, 1690. The coincidence is strong, just 200 years—1690–1890. It showed the country as it was then, as some traveler had come home and put it down on paper. I saw in a part of the map these words, "New Jarsy." And by these words I recognized New Jersey, between the Hudson River on one side and the Delaware River on the other, and I saw on the map Cape May and Big Egg Harbor and Little Egg Harbor and Burning Hall and N-a-v-e-s-i-n-k. But I looked with special interest to see what the traveler found in New Jersey 200 years ago. I found just these towns, and these alone: Elsingburg was the first word that delighted my heart, for it was the name of the township in which my ancestors settled and lived. It is a little town down in the southern part of New Jersey and is now called Elsberry, and a little above I found a place called Antioch, which has vanished, just as Antioch of old has gone. I found also Elizabethtown; but I found no Newark. Newark was not there then. I found Middletown with its old church. I saw Shrewsberry with its ancient church and graves and tombs. I found Perth Amboy, and I saw above, where Trenton now stands, a town which was named Burling and which was afterwards and is now called Burlington. But that was not the most interesting part of what I saw on the map. There I noticed that New Jersey stood without any setting, because upon both sides were New York and Pennsylvania almost a perfect blank. There was Philadelphia and West Chester and Chichester, and that was all there was in Pennsylvania. In New York the country was still more bare. There was far up the Hudson River, New Albanie, and at the mouth of the Hudson was New York—New York did exist, it is useless to deny it. But New York State was a blank, and yet there stood Jersey almost alone in her glory.

And now I find that New Jersey is mainly composed, after you get out of Newark, of men who have grown rich by selling jewelry, and these men come out into Orange and East Orange, Brick Church and Morristown and our other pretty towns to live. You gentlemen do attain a great deal more pleasure in life than the old citizens of New Jersey. Now the millionaires are coming to our State, and they buy up our beautiful land New Jersey after all is to derive some benefit from her setting.

But I have spoken enough about New Jersey, and inasmuch as I was promised that I should not be called upon to make a speech, and if I had the whole world to choose a subject from—I think that if a had the whole world to choose my theme from—I would take up a few moments of your time in speaking on a subject which I consider most important at the present time. That is not the McKinley bill or the wrongs of Ireland. It is not whether Stanley's exploration was a failure; but I think the subject that at this time is most interesting to my mind is that a youthful German professor has devoted his life to the grave and scientific investigation of the human system and its enemies, and has just announced his results. I refer to Prof. Koch, who has pronounced to the world his discovery of the cure for consumption, and has come to the relief of those who are suffering from that disease. The fact that we hear to-day that the Empress Frederick has received him and expressed her gratification at the fact; that the Parliament at Berlin has assembled, and has accorded him a vote of thanks; the fact that all the professors of scientific Europe and America are hastening to hear about this great discovery and how it shall benefit mankind, stamps the discovery as an extremely important one. The fact that Prof. Northnagle in Berlin the other day declared that the present moment was among the most sublime in the history of humanity, induces me to speak of it even upon this festive occasion. "War has her glories, but peace has her victories." To-day the conditions are reversed, and we now see that peace has victories that are more renowned than war. This is the time for the triumphs of peace, for the triumphs of humanity, for lifting up humanity and extending the blessings of peace to all mankind—the time when men are engaged in the sublime task of dragging the highest down by lifting the lowest up.

I allude to this question because every day, as the intelligence comes from Germany, the splendor and glory of this discovery impresses itself more and more upon my mind. I well know that some men doubt the value of the discovery here and there. They also doubted Dr. Jenner 100 years ago when he announced his discovery leading to vaccination for smallpox prevention; but I also know that very soon after that Jenner's birthday was celebrated in Germany, and to-day his name is praised all over the world.

I must express my gratification at being here to-night. I was here once before. I then had a good time, and I came here to-night even at the risk of being compelled to make this speech, to repeat my former pleasant experiences. I know that the very meaning of the word "jewel" as given by the dictionaries, in its utmost significance, is "joy," and surely you jewelers have had a joyful time, and you have given joy to others to-night. You also make beautiful things, and a "thing of beauty is a joy forever." [Applause]

Judge Noah Davis.—Mr. President and Gentlemen: I want to take exception to what Mr. Keasby has said of New Jersey's setting. I wish to remind him that without a "setting" there is no hatching. [Laughter.]

President Ide then dismissed the company as follows: Before declaring this banquet adjourned I wish that the gentlemen in this room remain, that they may meet one another in social conversation.

After a few minutes spent in introductions and conversations, the company dispersed, and the nineteenth annual banquet of the New York Jewelers' Association came to a close.

How the Pickpocket Works.

"A PICKPOCKET consults his own nervous condition constantly. No fine lady ever has such a time with her nerves as this aristocrat of the outlaws. If he does not feel right he wont 'work.' When he does, one of his favorite methods is to take a car on some well-dressed and wealthy street, and, seating himself side to the window, survey the shirt front of every would-be passenger as the car comes up. The moment one shows a diamond in his linen or cravat the thief rises and hurries to the platform to get off. He times his maneuvers so as to meet his man on the step of the car. They collide. The thief's hat—a silk stiff or derby—is in his left hand, and covers his dextrous right, which is put forward to protect its owner in the collision. It touches the newcomer right where the diamond sparkles, and is still covered by the hat in the other hand. With an apology the thief steps out of the way; the whole affair is the tenth part of a second, but as he bows his regrets he has the diamond in that mysterious hand of his, though he could not detail the moves by which he attained it, even if he should try."

CINCINNATI

[From our Special Correspondent.]

Cincinnati, Nov. 15, 1890.

The features of this glorious season are noise, activity and high art colors with an astonishing variety of expression in every phase of our art and industrial world. It seems to be a part of the conditions of life, like laughing gas, is a sort of test of strength, developing a disposition subject to the general current—falls in with it and is controlled by it. Thus many are impressed by the present tide of show and glitter, where a few have a preference for quiet tones. But let an æsthetic taste rule, and the charm of color and grace of form may be gathered into picturesque effects that will enchant even the most modest eye. This is why our merchants are to-day expressing the brightness of our universe in their displays, and the copying of Nature is ruling the world. Whatever has the charm of beauty or picturesqueness, whether in display or material design, finds its own excuse for being the rage.

The above are the uses now for some of the abuses of the trade. For instance, the recent experience of C. R. Gardiner, who arrived in the city Saturday night, develops a scheme put up on travelers to whom time is money. Monday Mr. Gardiner hired a boy to carry his samples around; he carried them to two places and then left him. The rest of the day Mr. Gardiner carried them himself. In the afternoon while at Plaut's an attachment was served on his goods, some $20,000 worth of diamonds. He was told at the Squire's office that the bill of the boy was $8.75; as a compromise would take $7.35. Gardiner demanded a trial and was told he would be tried next Thursday. He paid the bill as he could not afford to stay. *Moral*—Make your contract beforehand.

This letter has been sent to every merchant in Ohio, Indiana and Kentucky. It is from the Hazen Detective Agency, which represents the Anti-Lottery League: "The Anti-Lottery League has been organized for the purpose of securing the prosecution of all persons violating the anti-lottery law recently passed by the U. S. Congress, and prosecuting all persons who, as principals or as aiders and abettors, seek to increase the sale of tobacco, baking powder, watches, candy or other articles of merchandise by any lottery or scheme of chance. The undersigned has been employed by said association to prosecute persons violating the laws of your State, a copy of which is herewith enclosed, against lotteries and schemes of chance. You are hereby notified, if engaged in the sale of any articles of merchandise, put upon the market by persons, partnerships or corporations, who agree to give to purchasers of said articles money, watches or property of any kind by means of any scheme of chance, unless the same is discontinued you will be prosecuted for violation of the law." The Anti-Lottery League was organized in Cincinnati. Ex-City Comptroller Eshelby is President, and Judge M. F. Wilson has been retained as attorney.

The above is heartily endorsed by the Ohio Retail Jewelers' Protective Association, who have had some experience in dealing with watch clubs in direct violation of the law. Ed. Lohmeyer, Secretary of the Association, was recently brought up before a Newport squire on the charge of sending threatening letters through the mails, at the instance of J. R. Newton, jeweler, of Newport, Ky., who being engaged in the watch scheme was notified by Secretary Lohmeyer that if he persisted he would be prosecuted. The judge dismissed the affair as there was no case. Newton was then arrested for violating the law.

The long-talked of much-advertised bazar of the Ohio Humane Society is in progress at Music Hall this week. The liberal donations, the magnificent booths, the swell attendance and the munificent receipts daily, have given the management immense gratification. Cincinnati jewelers were solid in representations. The eastern manufacturers' donations are among the most superb in the hall. They have made many strong friends among the class who are liberal buyers, and who will remember their interest in Ohio's humane efforts to establish a permanent home for the helpless poor. Their names have been repeated so many times that the smallest child could tell you where those elegant pieces came from.

Homan & Co., manufacturers of silver plated ware, is one of the oldest houses in the country, but only in the last few years has it come out as a competitor with the best of them. This is due to the present management, which has infused new blood and a commercial activity into it, and pushed out into the business arena, North South, East and West and into foreign countries, until now they are fairly well known all over the world. Louis Homan and Jos. T. Homan are young in years, but have a wealth of experience and business sagacity that has placed them on a level with the best in the field of competition.

Bene, Lindenberg & Co. are headquarters for whatever you want that is good, cheap, in big lines or small lots in watches, jewelry and hollow and flat ware. They carry as fine grades in solid gold watches and diamonds as the market affords. Both Mr. Bene and Mr. Lindenberg have an extensive circle of acquaintances that have been patrons for years. Both gentlemen travel, and it is probably due to their engaging personal qualities that has won for them the large trade that they enjoy. They are now out with an elegant line of holiday goods, and when they call on you rely upon it that you get your money's worth every time.

John Holland, of gold pen fame, is making an elegant display of novelties in pen goods and accessories. The most elegant penstocks in every design and material thinkable.

Jos. Noterman & Co. have received a new importation of fine Olympus diamonds, which they have mounted up for the holiday trade. Wm. Pfleuger is out, and J. B. Osthoff is just fixing up a fine case to go out soon.

D. Schroder & Co. are pulling in some fine holiday plums.

Clemens Hellebush has imported some of the prettiest goods that ever came to this market. Elegant onyx clocks in colors and white, with French gilt trimmings. A most superb stock of Swiss music boxes with popular airs. The variety of filigree silver picture frames is beautiful. A full line of clocks of every style which cannot be duplicated by any western house. Their stock of fine silver novelties attract great attention. They have become renowned for their foreign watches of which they are exclusive agents.

Jonas, Dorst & Co. are making a big specialty in diamond mounting this season.

E. & J. Schweikert are making great headway in extending their trade in jewelers' supplies. They have now one of the most complete departments in this line in the West.

Duhme & Co. find that the demand for a better grade of goods is increasing. Also the demand for their superior quality in gold watch cases is wonderful. Their late designs in solid cases are veritable art treasures, and are sold for their beauty of workmanship as well as their novel designs. Their travelers report a fine trade; they are able to give their customers a complete line, as they carry the best in the market. The demand of special orders for fine cases is what this house prides itself on, and are now filling special orders from all over the country. They have recently enlarged their material department with Jos. Hornback in charge, who has put it in first-class shape to fill any order. Send in your orders.

The trade here speak very highly of the handsome line of gold filled watch cases manufactured by H. A. Wadsworth & Co., of Newport, Ky. The popularity of the Wadsworth case has been gained by its superior quality, handsome designs and perfect workmanship.



[From our Special Correspondent.]

THE FUTURE PROSPECTS OF TRADE.—A LIVELY CHRISTMAS TRADE.—NOVELTIES OF THE SEASON.—EAR RINGS POPULAR.—"GRAPE JEWELRY."—DIAMONDS STILL FIRM.—TWO SIGNIFICANT MERCHANDISE MARKS ACT CASES.

London, Eng., Nov. 15, 1890.

In commencing my remarks upon the jewelry and kindred trades, I have on more than one occasion found it necessary to refer to the condition of the general trade of our country. At no time has this been more necessary than now. At the present moment the prospects in our particular trade are encouraging, and the orders for jewelry proper and also for the rather miscellaneous assortment of goods which are included in the elastic term "kindred trades," are more numerous and larger than they have been for some months. But it is necessary that manufacturing jewelers, as well as all other manufacturers, have regard to influences outside their own industries.

The trade outlook generally is not of the most encouraging character. I arrive at this opinion from the indications of the chief influences which affect trade. Money is scarce and dear; within the last few days the Bank of England has advanced its discount rate to six per cent., and it is not likely to be any lower for some time. Materials and labor are dearer now than they were twelve or eighteen months ago, yet prices generally have not advanced correspondingly. The relations between capital and labor are more unsettled than ever. Much capital is just now locked up, while the crisis in South America and your own Tariff Bill are sure to have depressing effects on our future trade, for a time, at least. There are, no doubt, some influences operating favorably for a continued improvement in trade, but it is very doubtful whether they will be sufficient to counteract the depressing influences I have named. The trading custom of our own trades are such, that the price of money has always a very material effect upon our gold and silver industries. The directors of the Bank of England advanced their rate of discount on account of the demand for gold for export. If gold continues to leave this country for Spain and elsewhere, it is almost certain that the bank rate will be further advanced.

LIVELY CHRISTMAS BUSINESS.

So much for the future. As to the immediate present we have certainly some prospects of a good Christmas season. In all branches of our gold, silver and jewelry industries there are most decided preparations for such. It will be well if our manufacturers profit by the experience of last year. Then the production was far in excess of the actual requirements. Wholesale dealers were responsible for this perhaps quite as much as were the manufacturers. Unwise pressure was used to induce retailers to stock their shops, with the result that the large surplus after the Christmas season had passed, quite prevented any special purchases for the New Year. My experience is that if a retail dealer keeps himself well posted as to where he can obtain fresh supplies quickly, his trade will not suffer by having a moderate instead of an excessive stock. His payments to his manufacturer may be more frequent, but they will be smaller and his business will be more manageable, and the cause of less personal anxiety.

NOVELTIES OF THE SEASON.

There are some first-class novelties for the coming season. It will be more wise to arrange matters so that these may be sold out, and so leave room for other novelties in the new year than that the market should be injudiciously flooded with them. Moonstones, rough and polished, are still in good demand, notwithstanding the great number of them that have been recently sold. Diamonds are as popular as ever. They are extensively used in various kinds of ear rings and pendants. I recently saw some very bright stones in a not very sightly arrangement for the ears. This novelty took the shape of a feathered arrow which pierced the ear and was prettily studded with diamonds. There are several novelties for the ears, some of which are not at all attractive. Amongst the season's novelties are some rather pretty timepieces, in fancy stands, for the dressing table, and a great variety of gem rings. The latter lend themselves most favorably to the artistic and effective use of diamonds, and with diamond pendants, crescents and stars are this season extensively displayed.

"GRAPE JEWELRY."

A London wholesale jeweler, W. H. Walter, of Newgate street, E. C., has made a great hit with his latest novelty, "grape jewelry." He has a good show of all kinds of this special importation. A remarkably faithful imitation of the real grape has been produced, even to the color and delicate bloom of the original. These effects are heightened by some very appropriate and artistic mounting.

DIAMONDS STILL FIRM.

While speaking of diamonds I omitted to mention that the prices asked show no abatement, and though some grumbling is occasionally heard, buyers are paying them more freely. There is no appearance of waiting for a fall. The fact is the trade for Christmas require them, and even if there was a prospect of cheaper quotations early in the new year, present prices would have to be paid or manufacturers could not complete their orders. There are many rumors of increased supplies but no signs of their arrival, the London market being still very bare.

In connection with the recent exhibition at Edinburgh, I have just seen another specimen of the meanness of the executive. It is said that a thing which does not cost anything is never appreciated. The authorities of the exhibition are determined that their awards shall be fully appreciated. With the notification that a silver medal has been awarded, is sent out a significant hint that the medal itself can be obtained if the fortunate exhibitor will pay for it! This is meanness well carried out, and is not calculated to encourage firms to incur the expense and trouble of contributing, as of course they do, to the success of these displays.

THE MERCHANDISE MARKS ACT.

The Merchandise Marks Act is now in active evidence in reference to "false trade descriptions" of gold and silver goods. A case recently before the Sheffield magistrates shows the imperative necessity of dealers using all the means in their power to ascertain the quality of the articles they sell and describe. A dealer sold a chain marked and described by him as silver; on examination it was found that the chain itself was not silver, and though the ornamentation on it was of silver, it was of the commonest kind. The purchaser had it assayed and took proceedings against the dealer, who proved that he bought it with the same description as he applied to it when selling it and believed it to be a true one. The magistrate believed this explanation, and upon the dealer offering to return the price paid for the chain and to recoup the purchaser for his loss of time, etc., he allowed the case to be withdrawn. The chain was sold for 8*s.* 6*d.* and the amount the dealer had to pay was above £3 in addition to the return of the purchase money. The publicity given to this case will do good, as it shows that it is not enough for dealers to rely on the invoice descriptions of manufacturers, but that they must themselves take precautions to have their goods correctly described.

Another case is the subject of much talk just now. A firm is charged with falsely describing some bracelets, and with selling them as so described. It is a custom to send gold from which various articles are to be made in strips to the Assay Office. When tested

and marked these strips are returned to the manufacturer to be used. In the case in question it is said that silver solder had been added to these returned. Slips in rather large quantities in the process of making up, with the result that instead of being nine karat as indicated by the Assay Office mark, the articles are really only six and a half karat. I cannot say more about it at present as the matter is still under investigation. If the allegation is sustained it is likely not only to cause much uneasiness amongst dealers, but to create doubts in the minds of purchasers that are sure to injure trade. The primary guarantee the public have for the value of gold and silver articles purchased is the respectability of the firm selling them. It will be an evil day for our trade when the public cannot place the most perfect reliance upon that guarantee. VIGILANT.

THE NORTHWEST.

MINNEAPOLIS, Minn., Nov. 18th, 1890.

Things in the jewelry line are keeping right up with the procession in spite of the McKinley bill. All seem to feel that dull times are over for the Northwest, no matter what the condition of the East may be. The Minneapolis Jewelry Manufacturing Company, are having, it is said, three times as much business as they had this time last year, They have enlarged their establishment, put in more power, and yet have to hustle to keep up with their orders. The Company have lately taken the agency for the Pairpoint Mf'g Co.

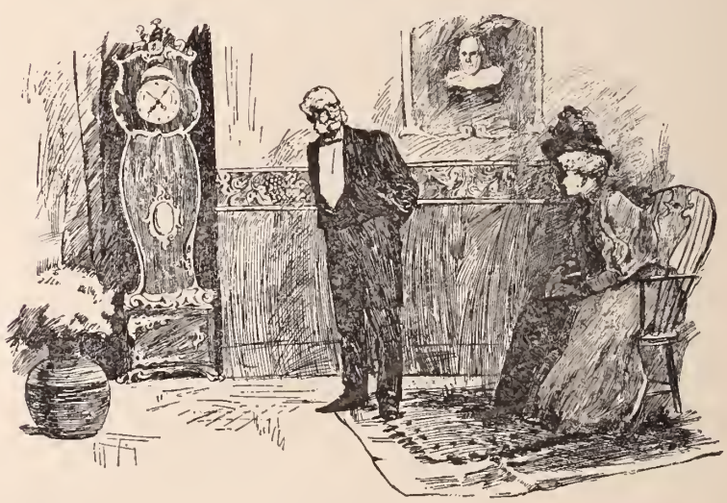
P. F. Egan, the St. Paul jeweler, who a few months ago sold out his business to join his brother, Patrick Harris, the well known manager of theatres in several cities, in the latter's theatrical enterprises, has decided, owing to Mr. Harris' recent tragic death, to return to his old business. Mr. Egan will have a finer store than before in St. Paul, and has left for the East to select an especially complete stock. He says he obtained many novel ideas during his recent visit with his deceased brother to Europe, which he shall make use of.

J. M. Donalson, the Minneapolis jeweler of burglarized and law suit fame, appears to be nearing the end of his troubles, though he has been obliged lately to respond to a subpoena in the Northwest, in connection with the loss of a large amount of jewelry stolen in Montana about three months ago. David Levy, the young man who was tried last month for robbing Donalson in Minneapolis, was found guilty of grand larceny, but he pleaded so earnestly for mercy and seemed to so thoroughly mean what he said about reformation that he was sentenced to but eleven months imprisonment.

A somewhat novel opening was that of jeweler Albert Hansen, in Seattle, Wash. He has been a prominent merchant in that city for eight years. He lost $20,000 in the fire which all but annihilated Seattle, not a year ago, but he has now enlarged his business and has opened a very fine establishment. The "opening" lasted from 3 o'clock in the afternoon until 10 o'clock at night, and quite expensive souvenirs were given to all lady visitors, while all had a chance to win a diamond ring valued at $150. Mr. Hansen buys for large jewelry establishments in Tacoma and Spokane Falls, Washington, besides the one in Seattle, and Easterners would marvel at the quantity and value of the goods.

Excitement has broken out anew and intensified in Wisconsin over the pearls to be found in the various parts of the state. Eastern jewelers have decided the pearls along Sugar river to be very valuable, so at Columbus and Waterloo everybody seems to be searching. At Waterloo, John Foley found one pearl for which he refused $900.00. He hopes to get $1500. for it. Benjamin Brittery would not sell one he found for $472 offered, and several pearls have been found there within a few days worth from $5 up. At Antigo, Wisconsin, the people have caught the pearl fever and in the streams near the place have found several, one as large as a pea and worth at least $50. Then the Chilton, Wisconsin, people wished to be in the excitement and began searching the two branches of the Manitowoc, the Kilknake and Mud creek, besides numerous small lakes which lie in Calumet county. It is beyond doubt, now, that these gems are valuable. The water in which they are found is clear, coming mostly from springs, which are plentiful in Wisconsin. The bottoms of the streams are sandy and full of gravel, and imbedded in this gravel are millions of clams. Out of two or three varieties of these, the pearl producing clams are found and the number of pearls in a single shell averages from one to fifty. A trip of about forty-five miles down the river on a pleasant day shows numbers of men, women and children at work. The men and boys with baskets in their hands dig the clams out of the bed of the river and carry them to the shore, where the women and girls open the shells and take out the gems. Farmers with wagons drive to the river and with shovels fill their wagon boxes and drive home. Specimens of the pearls have been sent to Chicago, New York and Milwaukee, and favorable reports as to their value have been returned.

All this, together with the discovery of rich placer deposits of gold in Jackson county, South Dakota, recently a part of the Sioux reservation and contiguous to the Black Hills, proves that we shall not yet be obliged to return upon loveliness unadorned. Gold in large and paying quantities has been found along Lage creek and prospectors are rushing to both places half mad with excitement. A new mining town named Gogan is already springing up like magic. An island, too, two miles from Fond du Lac, Minnesota, has recently been discovered to be a perfect Monte Cristo for silver. If present indications hold out, our tables will suffer no diminution of shining plate.



EXACT IN HER LANGUAGE.

She.—"Clinton, I want fifty dollars for pin money."

He.—"Pin money! New dress money, I suppose you mean.''

She.—"No, I mean pin money, It's a diamond pin that I want to buy.—*Munsey's Weekly.*

IT PAYS TO ADVERTISE.

CUMSO—You can't convince me that it doesn't pay to advertise.

BANKS—Why not?

CUMSO—I advertised for a watchman for my store when the position became vacant, and I was robbed the very next night after the advertisement appeared.—*Racket.*

PARIS GOSSIP.

[From Our Special Correspondent.]

NIGHT WORK AND ITS DISADVANTAGES.—SOME NOVELTIES AND REIGNING STYLES.—A UNIQUE JEWEL CASKET.—JEWELERS AIMING FOR NEW STYLES OF DECORATION.

Paris, France, Nov. 10, 1890.

All our manufacturers are very busy just now, as they certainly ought to be, and great many of them are obliged to keep late hours. Now, I may say that for various reasons evening work should not be encouraged in our lines. Although I must admit that it is hardly possible this time of the year to do otherwise, yet I do think that we could manage to avoid carrying it too far. An artisan who works steadily from 7 o'clock A. M. up to 6 or 7 P. M., taking just one hour for his lunch, has accomplished his daily task to the full extent of his bodily strength and power of attention. If he has to come again to the workshop after his evening meal and bend until midnight over setting stones, twisting gold, decorating silver and the like, he can only do it drowsily. His eyes have turned dim, his fingers get stiff and shaky, and his mind wanders. A skilful artisan who loves his work, and who could never bear the idea of doing work indifferently, may possibly nerve himself to make a perfect piece under such disadvantages, but in that case the fatigue is sure to reduce him the next morning. Of course, what I am saying does not apply to occasional evening work but to a long run of it. Artisans who keep late hours during the last two months of the year must, by degrees, get extremely tired, and even weak, through a protracted stay in overheated workshops. They come to do almost mechanically what is expected from them, and the pieces they turn out are generally inferior to what they would show under ordinary circumstances. Manufacturers are aware of it, and they know, besides, that their expenses in those busy times run very high, even in proportion to the profits realized. But the general belief is that it cannot be helped. Yet, if my information is correct, some keep their places at night in full blaze with a few workmen in it, simply to convey the impression that they have plenty of orders.

SOME REIGNING STYLES AND NOVELTIES.

Cheap brooches and ear rings of a picturesque style are exhibited everywhere in Paris. Besides the sour looking grapes already mentioned, there are some black currants, raspberries, etc. Original cases, imitating all shapes of baskets, lined inside with ruffled satin of various colors, are made to contain these sets which are more or less appetizing.

Long gold chains, after the old-fashioned style, are being worn in earnest. They are thrown round the back of the neck, hang loosely on each side and then are caught up like a drapery, the watch being fixed half way down the front of the bodice. These chains are adorned with white pearls showing at regular intervals.

I have noticed at the Palais Royal, a very original comb the prongs of which are made of mother-of pearl. The base of the head of unpolished pale gold forms a kind of irregular sandy ground from which spreads up in a graceful yet natural arrangement, some sea weeds in green gold, with a star fish made of brilliants caught in the middle of them.

Clocks in pink marble of a very elegant shape are being produced. They are curved on the side, rounded on the base and gracefully pointed at the top. They exhibit, here and there, ornaments in gilt brass partly burnished. The dial consists of a circular row of twelve little Cupids in various attitudes; each imp carries a ball with an hour mark showing on a gold background.

A CLOCK AND JEWEL CASKET COMBINED.

A very original jewel casket, which is also a clock has just been produced. It is made of ebony inlaid with ivory. The ornaments in the Henri II. style are extremely delicate.

JEWELERS ENTERING NEW FIELDS.

Most Parisian silversmiths are still wandering from the Renaissance to the Louis Quinze and the Louis XVI. styles, and their customers do not seem to object to it. Yet a well-known manufacturer is trying to introduce Russian shapes, with appropriate niello decorations. Another manufacturer, who must think himself very daring, is invading into the Persian style, and shows us some long-necked, flat-sided decanters, accompanied with large hollow basins. These articles are profusely adorned with a rambling and twisting foliage, through which fantastic horsemen afflicted with stiff necks are audaciously riding. The ornamental work is done with etching and some of the outlines are gilt so as to imitate damaskeening. I think that handsome pieces might be made in this fashion, but it would require a very delicate and patient handling I should like to see our silversmiths study all the Oriental styles and master all Oriental processes not with a view to reproduce *à peu près* what has been done in Asia centuries ago, but in order to acquire varied means of creating original pieces. Why should they all confine themselves to one or two processes, etching and repoussé? Let them employ as well, enamel, niello, damaskeening, inlaying of all substances and matters answering the purpose of decoration; but they ought to use all those processes with discrimination. Their object must not be to surprise us with a confused accumulation of ornaments showing all kinds of outlines and colors, but to bring us to admire their good taste as well as their skill in using each process *à propos*, and in obtaining with each substance the right effect.

Besides the Parisian Jewelers' Art School, which has been described in special articles of previous issues of The Circular, there is another one which was opened in 1875, under the management of the *Chambre Syndicale de la Bijouterie Imitation*. It has met with very many obstacles, but there is every reason to hope that it will soon be in a prosperous state. As far as drawing and modelling are concerned, I see no difference between the teaching given at this school and that of the other one. But several items of the programme call our special attention. Pupils are taught decorative painting and water colors. There is, besides, a special class where apprentices learn the different parts of their trade, so that they should become capable to make by hand a piece of any description in imitation jewelry. The curriculum includes gilding, silver-plating, nickeling; the study of precious stones, with a view to ascertain their worth and their distinctive qualities, and to understand the various ways of cutting them. Then pupils are shown how to imitate all kinds of stones. They learn also chasing on steel and other metals, besides ivory and mother-of-pearl carving, cameo cutting and all processes of enamel work. Evidently young fellows who attend that school ought to become perfect goldsmiths and jewelers, since they have to find out all that which causes valuable jewels to appear and to be so thoroughly attractive, before they learn how to reproduce them with spurious substances and base metals. That teaching is undoubtedly the most complete which can be obtained in the jewelry line, and although the number of pupils who have hitherto chosen to profit by it has been comparatively limited, nevertheless it has given excellent results. Apprentices in the imitation jewelry line can learn nothing at the workshop, the whole of the work being done there by stamping. Therefore it is only through attending a technical school of that description that they are likely to develop their taste, and to train their hand to do a delicate, varied and thoroughly artistic work.

Jaseur.

Lathes and Lathe Work.

BY THE MODEL WATCHMAKER.



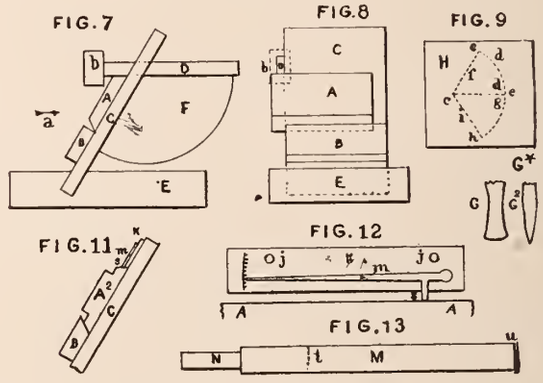
VERY LITTLE experience with the grinding device described and illustrated in the September number of THE CIRCULAR, will enable any ingenious workman to familiarize himself with all the parts of a slide, not excepting the screws for moving the tool. These screws can be cut with a screw plate with movable dies, or they can be turned in a lathe; of course, if produced by the lathe they are the best, but unfortunately they are expensive, and few watchmakers have lathes which will cut screws. Still we can console ourselves with the thought that a screw carefully turned and then cut with a plate with movable dies will fill the bill for all ordinary requirements. Before we further discuss the matter of screws, we will say a few additional words about the pieces forming the slides.

It must be evident to any practical man that the grinding system described will produce almost absolutely perfect results. To determine the proper angles we may magnify any error by the arrangement shown in figs. 7 and 8. To make the device we take a piece of heavy plate glass about 5 by 10 inches and set it edgewise in a piece of board, but at an angle of 60° as shown in fig. 7, where *C* represents the glass plate and *E* the board. On the face of the glass plate we cement a piece of metal shown at *B*. This metal plate can be attached with common glue, mixed with a little white lead, and by placing some moderately thick paper between the metal and the glass. The better course, however, is to drill holes in the glass and metal and put small bolts through them.

The method of using such a testing device is to prepare a straight edge about 8 inches long, and place a weight at one end as shown at *b*, fig. 7. The idea is, we balance the straight edge on the beveled edge of *A* as shown, said beveled edge controlling the straight edge, so that if we place the sector *F* on the back of the glass plate *C*, we can determine the angle of *A* with great exactness. The object of placing a weight at the end of *D* is to enable us to allow the greater part of the bar *D* to extend outward and be compared with the sector *F*. This sector (*F*) should be carefully made of metal, and can be produced by taking a plate of sheet zinc as shown at *H*, fig. 9, and setting a pair of fine pointed dividers at, say, 6 inches, and sweeping the arc *d d;* then with our dividers still set at 6 inches we lay off the points *e e* and draw the radial lines *f g*. Now, the angle *c* between the lines *f g* is 60°, and if we lay off an additional arc similar to *h* and draw the line *i*, we have lain out a sector embracing an angle of 120°, and similar to the one shown at *F*, fig. 7.

Perhaps it may not be out of place to describe the method of drilling a glass plate. It is well to use rather a large drill, say about $\frac{3}{16}$ of an inch. The drill is shaped as shown at *G*, fig. 10; the upper end is in an ordinary wooden handle and is worked by the hand, using considerable pressure, and giving the drill a slight rocking as well as rotary motion. The drill is kept wet with spirits of turpentine. When hardened the drill should be heated to a cheery red and plunged into cold water. The idea some people have that drills are made harder by being heated to a red heat and plunged into quicksilver or some acid or saline solution is not sustained by long experience in the workshop. In making up the slides the greatest care necessary is in constructing the central bar on which the upper slide moves back and forth; this bar is shown at *A* in the June, '90 number of this journal. This part must not only have its outer edges at an angle of 60°, but the slides must be perfectly parallel so that the slide or carriage will glide from end to end with the same steady friction. We have just explained how the angles can be determined to great accuracy, and we will now explain how the parallelism of the bar can also be tested.

The piece *B*, fig. 7, is substituted for one with a beveled edge ground perfectly true, both as to bevel and straight line; on this is placed the bar to be tested for parallelism. Immediately above the bar is placed a device shown in position at *K*, fig. 11. This device is shown separate at fig. 12, and consists of a metal plate *K* on which



is placed a hand *m*, which has a blunt point *s* extending downward as shown. This point *s* rests on the edge of the bed plate A^2, fig. 11, and as the bed plate is moved along under the point *s*, it indicates any error of the bar *A* by the hand *m* moving up and down on the index *k*. The plate *K* can be made of heavy brass and attached to the glass plate *C* by two screws shown at *j j*, fig. 12. It is, of course, to be understood that the screws are tapped into the brass plate *K*. The pieces shown at *H* H^2 (September CIRCULAR) need not be tested in this way; all they need is to be ground to the proper bevel, and the side tested for parallelism by ordinary calipers.

We would say in encouragement to any person who aspires to make such a slide rest that they will find the carrying out of these instructions not at all difficult, and if they will only make the attempt they will succeed. There should be screws placed so that the head will rest on the side piece shown at *H*, diagram *G**, September CIRCULAR. These screws are tapped and countersunk to excess into the piece *G*, so that the head rests on the piece *H*, and if the screw is urged forward will force *H* inward and clamp the bar A^2 and take up any lost motion. In building such a device it is better to buy the screws which hold the parts together than to attempt to make them. The feed screws are made of Stub's steel wire about $\frac{3}{16}$ of an inch in diameter. The wire is carefully centered in a back rest and then turned to the form shown in fig 13. The part *M* between the lines *t u* is cut carefully into a screw. I say carefully, because if the cutting is performed rapidly, forcing the dies to do much work at one time, the screw *M* will be sprung and distorted; but if the cutting is done leisurely the threads are slowly incised and will be very nearly true. The part at *N* is for the crank, and also serves as a bearing for the screw in the stud which is attached to the bed A^2. The nut into which the screw works is attached to the slide or carriage shown at diagram *G**, September CIRCULAR. On top of the slide mentioned goes another slide made very similar to the one just referred to, only the parts are arranged for a shorter transverse motion. In our next installment we will arrange the minor details and put the several pieces in place.

A PENDING SUIT.

CADDIE CUNKLE—Aw, Mr. Clip, can you press my suit to-morrow?

MR. CLIP—Oh, yes, Mr. Cunkle; it is in the hands of my lawyer now.—*Smith, Gray & Co.'s Monthly.*



[The Circular is not responsible for the opinions or statements of contributors, but is willing to accord space to all who desire to write on subjects of interest to the jewelry trade. All communications must be accompanied by a responsible name as a guarantee of good faith. No attention will be paid to anonymous letters. Correspondence solicited.]

November 13, 1890.

To the Editor of the Jewelers' Circular:

If you care to publish the enclosed correspondence as news we shall be glad to have you do so.

Among others, the *Capital*, of Topeka, Kansas, published Mr. Houghton's letter, with the following prelude:

"CAUGHT IN A SLICK DODGE.

"One manufacturer was prettily caught by R. C. Houghton, a merchant in Fort Scott, the other day, in attempting to make higher prices by false representation of the new tariff. Mr. Houghton is a dealer in watches, clocks, etc, and he wrote to the Seth Thomas Clock Co. the following letter, which speaks for itself."

Yours truly, Seth Thomas Clock Co.
C. H. Brahe, *Manager.*

THE CORRESPONDENCE.

Fort Scott, Kansas, October 27, 1890.

Seth Thomas Clock Co., Chicago, Ill.:

Gentlemen—Your recent notice is just received. You say: "Please note new prices of marble and onyx clocks, due to the increased tariff." I have done so and figured out the per cent. you have added to your old prices, which is quite a surprise to me. Where the tariff law affects articles it is done in most cases by adding or deducting a rate per cent, and its effects should be uniform.

Below you will find a statement showing the variations in your change of prices figured to within a small fraction of one per cent.

On your	No.	95	you add	12	per cent.
"	"	98	"	12	"
"	"	103	"	7¼	"
"	"	116	"	9	"
"	"	144	"	6¾	"
"	"	1160	"	12½	"
"	"	1168	"	13½	"
"	"	1400	"	4	"
"	"	1485	"	3	"
"	"	1500	"	7¾	"
"	"	1509	"	15	"
"	"	1511	"	16	"

And so on through your list, showing a very unequal advance in your prices.

Then, upon turning to the new tariff law, and comparing it with the old, I find under the head of "Marble and Stone, and Manufactures of," the following:

	Old rate.	New rate.
Marble of all kinds in block or square, per cubic foot	$0.55	$0.65
Veined marble, sawed, dressed or otherwise, per cubic foot	1.10	1.10
Manufactures of marble not specially provided for in this act ad valorem	50%	50%

It would seem that comment is unnecessary. If you find that you cannot manufacture the clocks at the present prices, why say so like men and advance your prices accordingly, and not falsely attribute it to the tariff.

This trick of raising prices "on account of the tariff" when there is no truth in the claim, has been resorted to so much by houses of a bad odor that it makes us weary. Why a house that has heretofore borne a good reputation for honest goods and fair dealing should so stoop and falsify themselves in order to cast odium on a good law is beyond our comprehension.

Very respectfully yours, R. C. Houghton.

November 13, 1890.

R. C. Houghton, Fort Scott, Kansas:

Dear Sir—Our attention has been called to your letter dated Oct. 27, 1890, addressed to us at Chicago, and subsequently published in the newspapers.

It is important to the life of every statement that it be backed by proper data. Yours is not, because its tariff comparisons are all wrong as far as they refer to "Clocks," the subject under discussion. Among other things, we import marble and onyx clock cases, front sashes, back sashes and dials.

Formerly when "Clocks and parts thereof" were provided for in the tariff, all the named items were entered subject to a duty of 30 per cent., cost of packing cases and expenses not included. Now, "Clocks and parts thereof" not being enumerated, are governed by the "Omnibus Clause" of the new tariff, providing for "Manufactured articles not otherwise specified," and packing cases and charges bear the same duty as contents (Administrative Bill).

The duties levied by recent legislation are:

On marble and onyx clock cases.....50 per cent.
" front and back sashes.....45 "
" porcelain dials.....55 "

And in addition, the administrative charges (duty on packing cases and expenses), which on clock cases amount to 5 per cent. and on sashes and dials about 2½ per cent.

It requires no argument to prove that where the same grade American movement is fitted into several styles of imported cases of different values upon which an advance has been made, the prices of the complete clocks cannot be increased uniformly, but must be made up according to cost of case.

This alone would explain the absence of uniformity, but when you were confronted by the great variations of advance shown by your figures, ought it not to have occurred to you that there might have been a (to you) unknown factor which had contributed to the result; for instance, stock on hand?

When the revision of marble list was made, we took into consideration (as proven by your own calculations) what part of the season's importation of each pattern we had in store, at the lower rate of duty, and fixed its price proportionately instead of adding full percentage upon the basis of "Cost to duplicate." Did this "falsify" or "cast odium on a good law"?

The best law we know is "Do unto others as you would have them do unto you."

It is our intention to remain in business many years, to manufacture honest goods, both clocks and watches, to treat everybody fairly, and to receive and retain the confidence and good will of the trade, irrespective of political affiliations.

Yours truly, Seth Thomas Clock Co.
(Signed) C. H. Brahe, *Manager.*

Beaver City, Neb., October 19, 1890.

Have not received my Circular for October. Please send me another copy as I do not wish to miss any.

A. J. Green.

Miami, Mo. Nov. 9, 1890,

To the Editor of the Jewelers' Circular:

I want to subscribe for the *Deutsche Urmacher Zeitung*. What is the address of the publication office. Yours, J. K.

[The *Deutsche Urmacher Zeitung* is published ot 105 Markgrafen street, Berlin, Germany. H. Horend, Albany, N. Y., is the American agent. Ed.]

Fashions in Jewelry

A Lady's Rambles Among the Jewelers.

HOLIDAY NOVELTIES IN GOLD, GEM-SET AND SILVER JEWELRY.

THE holiday shopping season is at its height, and nowhere do the seekers after Christmas gifts find a more tempting array than in the show cases of our jewelers and silversmiths.

NOW-A-DAYS present-giving has been advanced to the dignity of an art. In selecting a gift one takes great care that it shall be aptly and, if possible, quaintly suited to the recipient. The consequence is that much time and thought are bestowed on all manner of delightful oddities in fancy jewelry and artistic silverware. Women delight in pretty things for personal use; there is no doubt about that Hence gifts designed for them lie largely in the jewelers' realm.

*** *** ***

THAT very useful article the watch, now that it may be worn in a poetical way, is exceedingly popular with the fair sex. It may tick beneath the diamond encrusted foliage that serves as a chatelaine, or may be half hid by a bow of enamelled gold ribbon fastened jauntily at one side of the bodice.

*** *** ***

TURQUOISE studding furnishes a novelty in ornaments for bonnets. This consists of pale blue stones set in laces, passamenteries and velvet bandeaux.

*** *** ***

LARGE butterflies of lace dotted with rubies and emeralds are in favor with Paris milliners.

*** *** ***

FOR horsewomen, an English firm have introduced an extremely ingenious novelty. It is called the watch holster. The holster is made of solid leather, and is fastened to the off-side of the saddle by means of a flap. Protected by a glass lid at the top is a silver watch with white dial on which the figures are more than usually distinct. The rider has but to glance for an instant to the right to see the time.

*** *** ***

NOW that wedding rings are to the fore, it may be of interest to know that the ancient matrimonial ring was made with a double link having a hand upon each link. These when brought together formed a perfect ring with hands clasped in each other and the two made one.

*** *** ***

A LOVER'S knot in blue enamel and diamonds affords a charming brooch from which to wear as a pendant, a tiny enamelled watch.

*** *** ***

MANY of the watches are smaller and more elaborately decorated than ever. There are watches, the cases of which are entirely covered with good-sized diamonds, with a ball encrusted with diamonds hanging at the end of a gold chain.

*** *** ***

A SUGGESTIVE brooch has the bass and treble clefs in brilliants.

*** *** ***

A GOLD interrogation point rendered specially appealing by the size and purity of the gems that enrich it, may be used by a timid swain as an eloquent deputy in putting the question he dares not ask.

A WATCH in accordance with feminine fancy is in the form of a rose with pearl-colored leaves, the dial forming the center of the rose. This swings from a chatelaine of pearl-set chains.

*** *** ***

YOUNG ladies delight in decking their hair with pins studded with gems or enriched with gold open work.

*** *** ***

EAR RINGS with drops are again to be seen, but the drops are dainty and small. An exceedingly attractive pair of ear rings consists of pear-shaped pearls pendant from a diamond. Thistles in diamonds, just the flower falling downwards, afford pretty ear ornaments.

*** *** ***

THERE is a revival of the loose chain bracelet with padlock.

*** *** ***

MOONSTONE jewelry in artistic setting of silver is immensely popular. This jewelry is remarkable for the exquisite workmanship of the mountings, which is as fine as any work of the goldsmith.

*** *** ***

SILVER rings retain their old favor.

*** *** ***

A HANDSOME fob chain seen was of fine gold webbing with an elaborately carved seal attached.

*** *** ***

TINY gold watches are now worn in the same place and after the same manner as a medal.

*** *** ***

NECKLACES, by the by, are more worn than ever. Some of them take on the form of a fringe. Gold and silver beads continue to be popular.

*** *** ***

A DIAMOND coronet, capable of being formed into a necklace, is a popular head ornament for full dress occasions.

*** *** ***

ONE of the newest and most magnificent ornaments for fastening in the folds of an evening gown is the "rising sun" in diamonds.

*** *** ***

BIRDS' heads represented in colored gold and precious stones afford attractive scarf pins. Eccentric scarf pins are much affected by young men, many of whom furnish their own designs.

*** *** ***

ALL leading jewelers now devote at least one case to those dainty jeweled articles rarely seen outside the show cases, viz., ladies' garters.

*** *** ***

GARTERS with gold and silver clasps inscribed with a monogram, date or appropriate motto, or enriched with gems, are favorite Christmas gifts. The idea is generally prevalent that yellow garters are prized above those of any other hue; but an inspection of leading jewelers' stocks of these articles makes it appear that the new blue elastics are at least dividing favor with golden tinted ones.

*** *** ***

A NEW fan is alwyas an acceptable novelty. The last idea is an extra stick placed on the outside and movable. By means of patent fastenings, flowers can be attached to it and the rib may remain either outside or can be slipped into the center of the fan.

MINIATURES of historical characters are much worn, both in brooches and in bracelets.

*** *** ***

PRAYER books are works of art now, and are in demand not only for weddings but as Christmas and anniversary gifts. Prayer books cased in silver artistically wrought, are now carried at the wedding by the bride in place of the old time bouquet.

*** *** ***

PRAYER books bound in white morocco with elaborate silver trimmings are exceedingly effective. Very pretty, also, are the books with morocco covers, embellished with a silver cross on one side and the owner's initials on the other.

*** *** ***

A QUAINT ring is snake-like in form; at the small end is a diamond and at the large end a sapphire.

*** *** ***

THERE is a demand not only for fancy-colored diamonds, but for all colored gems.

*** *** ***

THIS season's display of brooches shows a great variety of outlines, many exceedingly graceful. Some charming ones are of vari-colored gold in the rococo style and enhanced with diamonds.

*** *** ***

CARD cases are very elegant this season. Alligator, rattlesnake and lizard skins in delicate shades are used in making these cases, which are finished with corners of gold or silver in fine chased designs. Sometimes several little gold flowers massed together form the ornamentation. Again, there appears simple scroll-work on one corner.

*** *** ***

EFFECTIVE card cases are those of seal, on which the script initials of the owner's name appear in silver.

*** *** ***

LADIES' purses are now being made nearly square and sufficiently large to contain visiting cards.

*** *** ***

WHAT is known as velvet calf is popular for ladies' hand bags and purses.

*** *** ***

CHATELAINES with their taking little pendants, continue to be liked.

*** *** ***

VISITING lists, also pocket and prayer books, are seen with ivory covers adorned with applications in oxidized chased silver and also in enamelled gold.

*** *** ***

GOLD handled pocket knives set with small gems suggest an elegant gift for the masculine sex. The same may be said of gold gem-set match safes.

Silverware, China, Glass, Etc.

THIS season's productions in silver, whether for table or personal use, emphasize the present tendency to bright finish with rich chased decorations, the latter being frequently applied in the form of a border round a bright center.

*** *** ***

A SALVER pitcher and goblet very suggestive of Christmas cheer, was highly decorative in effect, with its combination of silver, oxidization and varying shades of gilt.

*** *** ***

MANY of the forms, especially in table ware, are low, broad and quaint.

*** *** ***

SILVER water pitchers run small to medium in size. A pleasing pattern is that in which the upper half is bright finish, with the lower half fluted in Queen Anne style.

*** *** ***

AN artistic table piece, designed for a fruit dish and grape stand, simulates a broad leaf for the dish; from this springs a curving vine with smaller leaves, under which appear silver tendrils. On these latter bunches of grapes are hung, while other fruits are placed in e dish below.

*** *** ***

UNIQUE lamps are represented in endless array. Many of these have vase-shaped bowls, which are, in fact, handsome vases mounted as lamps.

*** *** ***

STANDING vases promise to rival standing lamps in popularity. These vases are designed for long-stemmed flowers and, in some instances, stand as much as four feet in height.

*** *** ***

SILVER plated bamboo baskets in the form of flat canoes are attractive receptacles for cut flowers.

*** *** ***

ODD little bamboo pails with two handles furnish pretty coverings for flower pots.

*** *** ***

CONNOISSEURS of fine china are delighted at the extreme lightness and delicacy of Belleek china. Large vases of this ware are out this season with elaborate decoration of gold relief and chasing.

*** *** ***

CLOCKS in japanned iron cases, with ornamentation of silvered bronze, are attracting attention by their merit and comparatively low price.

*** *** ***

NEW and beautiful designs of silver deposit work are shown in cologne bottles and other toilet pieces.

*** *** ***

TOILET bottles of silver, showing bright finish, with chased tops, are quite new.

*** *** ***

IN bon bon boxes an expensive novelty is a gold egg of natural size, the spring of which is concealed from sight by a diamond.

*** *** ***

SILVER boxes for bon-bons are decorated in enamels in designs of old Vienna porcelains

Two handles have appeared on some of the new tea sets.

*** *** ***

A BEAUTIFUL bonbonniére in gold is in the form of a small bag tied round the neck with a band of rose diamonds.

*** *** ***

SILVER dessert knives have the figures of Bacchus and Bacchantes exquisitely wrought on the handles.

*** *** ***

COMB trays and the backs of hand mirrors and brushes show bright finished centers surrounded by Queen Anne flutings.

*** *** ***

CLOCKS are a favorite article of this season. Sterling silver heart clocks are affected just now for boudoir and writing tables.

*** *** ***

NUMBERED with French clocks are fine old Louis XIV ones inlaid with tortoise shell, and showing richly chased brass mountings.

*** *** ***

ENGLISH chime clocks are in demand.

*** *** ***

MANY pleasing combinations of fine cut glass and silver are to be seen. Glass ice pails with silver handles and hoops are dividing favor this season with ice bowls.

*** *** ***

QUITE new are little silver trays, of circular form, in which to set water pitchers and individual tumblers.

*** *** ***

CLARET jugs and loving cups of crystal glass, with bas relief ornamentation of silver deposit-work in the form of vines and flowers, are attracting deserved attention.

*** *** ***

NEW ideas from the best sculptors are expressed this season in the Carrara marbles.

*** *** ***

STRIKING effects in glassware are produced by a combination of several colors in one piece.

*** *** ***

CUT glass lamps are out in rich and costly designs.

*** *** ***

THE "Tuxedo" is an attractive new spoon pattern.

*** *** ***

GIFT cups and saucers, téte â téte sets and jardiniéres in decorated French China are all favorites with holiday shoppers.

*** *** ***

ORNAMENTAL articles in Royal Dresden china have lost none of their old time fascination.

*** *** ***

SOME ivory knife handles are ornamented with silver deposit work.

*** *** ***

SOME dessert knife handles in ivory have appropiate designs inlaid in silver.

ELSIE BEE.

Though diamonds should be worn only in the evening, black onyx jewelry may be worn in mourning.

A Novelty in Earrings.

A GERMAN inventor has obtained an Imperial German patent for a new construction of earrings, which is so peculiar and differs so much from the styles heretofore made that it may be regarded as something altogether new. The front bow is of fine



silver or 18-karat gold and set with small diamonds; the hook and the spring are of red gold, while the setting of the jewel is of platinum, to increase its strength. The setting is simply a very narrow bezel which incloses the round edge of the jewel so securely that it is almost impossible to lose the stone.

To insure greater security the fairly strong gold loop on the platinum bezel is fire soldered. The after all parts have been set and finished, is pushed into a correspondingly large slit in the lower part of the bow, and secured by a pin, which passes through the bow and the loop, and is then riveted securely. The jeweler will readily see that in this manner the jewel will be visible in its full beauty and can be cleaned very readily.

War on Watch Clubs.

PHILADELHIA JEWELERS TRYING TO SUPPRESS THEM.

THE question is agitating legal minds in Philadelphia whether the promotors of numerous so-called watch clubs in that city are not sinning against the State law, which forbids lotteries in any form. Camden jewelers hope to stamp out the rage for such clubs across the Delaware, but the evil, if so it be, holds sway equally in Philadelphia. There are a number of enterprises that conduct a flourishing business in Philadelphia, some of which are engaged in an unlawful practice, according to the logic of leading lawyers.

One of these "clubs" is located on Chestnut Street. This club admits sixty-five members, each paying in $1 a week. At the end of the second week there is a drawing and one lucky man gets a watch. He then drops out, and the others go on paying in their weekly dues of $1. At the expiration of the week there is another drawing, and so on for sixty-five weeks. Of course, half the members of this enterprising organization pay for the watches worn by somebody else.

Another club, on exactly the same plan, has branch offices in Chester, Easton, Reading and Altoona. Fifty members are admitted, and a goodly portion lose their weekly payments entirely, lured on by the hope that they will get a watch for less than its face value.

Some other clubs in the city are operated on a slightly different plan. Of these the members pay in for a given number of weeks $1, but at the end of each week there is a drawing to see who will get the watch. The payments continue until all have watches. In these clubs no one actually loses any money, for all pay in the same amount, the only difference being the time when each gets a watch.

Judge F. Carroll Brewster being asked whether these clubs were lotteries, replied: "The first two mentioned are lotteries pure and simple, for the reason that many members of the so-called 'clubs' pay in a certain sum of money with the expectation of winning a large sum. Of course, others get nothing for their money. These two are carrying on their business unlawfully, for they are lotteries. The clubs which give their members full value for the money paid in are not lotteries."

This movement against watch clubs in Camden has been taken up by the trade throughout the whole country. The National Association of Retail Jewelers has taken the matter up, and is daily in receipt of letters offering financial aid in this crusade. A Philadelphia jobber it is said, has notified the Association that they can draw on him for $10,000 if necessary, to push the war."



A Complete History of Watch and Clock Making in America.*

[By Chas. S. Crossman.]

Number Forty-nine.

Continued from page 70, November, 1890.

WILLIAM JONES.

William Jones was not a clockmaker, but was so closely connected with the trade and so well known to the Philadelphia clockmakers that he deserves passing mention. He certainly brought the art of painting and decorating clock-dials to almost perfection. He had an oven for baking after painting, so that when finished the paint on the iron dials was almost like a coat of enamel. For twenty years he had a shop in Strawberry street, but did not do much after 1840 as his hands became paralyzed, incapacitating him from work during the last years of his life.

PHILIP, JR., AND JOHN FISHER.

These men were cabinetmakers in North Second street, who took up as a business the making of cases of the English high case pattern from 1830 to 1840. They subsequently moved to Germantown Road, and soon after gave up the clock case making.

J. FETON

was a Frenchman by birth, and carried on a small clock-making business in his house in Chestnut street below Third street, commencing in 1828. He made for the most part regulators, with the Graham dead-beat escapement. Mr. Feton died in 1845, having attained some local eminence as a clockmaker. Some of his regulators are still in use.

J. L. GROPPENGEISER

is a native of Hanover, Germany, but worked in Norway and England for several years. He came to Philadelphia in 1839, and worked a short time for Messrs. Riggs. In 1840 he started in business for himself in Front street, and gave his attention to fine clocks. He has made six astronomical clocks, two of which are in observatories. He has also made six chiming clocks, and many other fine clocks of the high case pattern. He remained in Front street until April, 1843, when he moved to 3d street, and in 1857 to his present location, 814 Walnut street. In all the astronomical clocks which Mr. Groppengeiser has built he used lantern pinions.

JACOB ALLEBACH

was born at Doylestown, Buck County, Pa., in 1803. At the age of seventeen he was apprenticed at clockmaking in Pottstown, Pa., and afterwards commenced to make clocks on his own account. He subsequently moved to Philadelphia where he made clocks until 1840, when he turned his attention to watch-repairing. His son, Mahlon B. Allebach, succeeded him in business and is now located at 126 North Second street, where he has made a few clocks.

The following are the names of a few other clockmakers, of whom but little is known, and who made clocks in a comparatively small way:

Thomas Perkins, Front street, between Walnut and Spruce, 1778 to 1800.

Thomas Parker, Third street, between Market and Chestnut, from 1785 to 1795.

Isaac Austin, corner of Water and Arch streets, 1785 to 1805.

Solomon Parke, 179 South 4th street, 1791 to 1810.

Robt. Lester, 167 High street, and 7 South Second street, 1791 to 1798.

A. Brazier, 23 North 3d street, 1798 to 1820.

James McDowell, 136 South 4th street, from 1805 to 1825.

Nathan Wetherell, 3d street, between Market and Chestnut streets, previous to 1840.

John Menzies was a clockmaker in Philadelphia previous to 1850. He made several clocks with peculiar escapements, that were more of curiosities than time-pieces.

CLOCKMAKERS OF PENNSYLVANIA, OUTSIDE PHILADELPHIA.

JOHN EBERMAN AND OTHERS, LANCASTER, PA.

The early history of John Eberman is so wrapt up in obscurity that it has been impossible to unravel it with the means at the command of the writer, but while looking for facts in connection with him as a clockmaker, the names of others are found regarding whom historical data is equally scarce. Before speaking further of Eberman we will notice some other clockmakers with a view of leading up to a point where he should be introduced. The old Lancaster County Court House clock was put up in 1756 and was probably built in England. By consulting a history of Lancaster County we find that Abraham Leroy was in May 1757 paid £1 15s for the care of the clock, and 2£ in November of the same year and semi-annually thereafter until 1764 when the following record appears: "Abraham Leroy, clockmaker, deceased being ye late person that took care of ye County clock and it now being necessary to appoint another they have accordingly appointed and agreed with Rudy Stone, clockmaker, to take ye necessary care of ye said clock at £4 yearly, from this date." In 1770 we find the care of it placed in the hands of George Hoff, and in the following year John Eberman assumed the care of it. The clock was destroyed by fire in 1784 and Mr. Eberman who was at that time the leading clockmaker in Lancaster, was engaged to make a new clock for the new Court house, which he completed in 1787. We find by the records that he was paid £550 for it, the price being fixed by a commission of three persons appointed for that purpose. Outside of this Court house clock his clocks were of the usual high case pattern of the day. He continued business until 1820.

MARTIN SCHRINER.

Martin Schriner was for a few years quite a prominent clockmaker in Lancaster. He commenced there in 1790 and was in the height of his prosperity during the early part of the present century. His brother, P. Schriner, was later associated with him, under the firm name of M. & P. Schriner, and they continued the business until 1840.

G. M. ZAHM.

G. M. Zahm was born in Lancaster and served his apprenticeship with M. & P. Schriner, from 1831 to 1836, after which he started in business for himself. He made comparatively few clocks as he was engaged in a general business. His two notable clocks were a regulator in 1838 and a musical clock in 1876. He also made three watches between 1863 and 1866, making all the parts except the springs. He is still in business in Lancaster.

OTHER CLOCKMAKERS OF LANCASTER.

Christian and Daniel Farrar were located in the town of Lampeter, Lancaster County, Pa., as early as 1780. They made but few clocks, most of which were quarter-hour strikers, accomplished by four hammers striking on three bells. They gave up clockmaking early in the present century.

Joseph Bowman was born on Dec. 10, 1799, in New Holland, Lancaster County, Pa., and served his seven years apprenticeship with Anthony Baldwin. He went to Strasburg in April, 1821. In the summer of 1821 he moved to Lancaster and began to make clocks on his own account and continued to do so until 1844. He constructed ninety, all of which were of the usual style of high case eight day clock.

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John Davis made high case clocks in New Holland, Lancaster County, Pa., previous to 1805. At this time he removed to Shippensburg, Pa., to reside, but in a few years he discontinued making clocks, and became a preacher of the gospel.

John Easterley was a clockmaker in a small way in New Holland, from 1825 to 1840.

John Filber was in Lancaster, from 1810 to 1825.

Anthony Baldwin, at Lancaster, from 1810 to 1830.

George and John Hoff, successors to George Ford, Lancaster, Pa.

Jacob Mendalhall, Lancaster, Pa.

George Baldwin was a brother of Anthony and made clocks in Sadsburyville, from 1808 to 1832.

Thomas Farrows was located at Strasburg, Pa., from 1805 to 1815.

Isaac Barrows, Eby Manheim, Joseph Bowman, all in Strasburg, Lancaster County.

J. and P. Boyd had a shop on the Philadelphia turnpike early in the present century. They combined forging and clockmaking.

The following clockmakers we are unable to give the exact date at which they flourished: Benjamin Witman, Reading, Pa.; William Kulp, Little Safford, Bucks County, Pa.; Conrad Remerman, Chambersburg, Pa.; John Fisher, Yorktown; Joseph Thomas, Norristown, Pa.

Valentine Urick was a Swiss clockmaker, who worked in Reading and vicinity in 1760 and a number of years afterwards.

Jacob Wolf and Peter Grim Vine worked at Waynesboro in the early part of this century.

Daniel Oyster, John Kline, D. Hill, Joseph Fix, and Daniel Rose were clockmakers in Reading from 1820 or 1830 to 1845.

(*To be Continued.*)

Exhausted Gold Baths.

ECONOMY and the superlative degree of care and watchfulness, are the fundamental conditions in a manufacturing jeweler's establishment; no material that ever entered and was used in the shop should be thrown away; more or less gold will cling to it, and it has a certain value. Let the jeweler ever remember the Scotch proverb, "Many a mickle make a muckle." A jeweler of Pforzheim, Germany, prompted by curiosity, recently had the soil around his shop analyzed, and it was found that quite a fair quantity of gold dust was carried out of the shop, clinging to the shoe soles of his workmen. To this category also belong exhausted gold baths, which must be collected and sold to an assayer; it is not an easy job to reduce the gold from a cyanide bath; a chloride of gold solution is more easily handled, as the metal can be precipitated with a solution of sulphate of iron.

The superintendent of a large German manufacturing firm says that it is not worth while bothering with a few quarts of cyanide of gold baths yourself; he collects quite a lot and then uses the method which he has employed with greatest success for a long time, and prefers it to all others. Add to the gold bath, either in open air or in a well drawing chimney, sulphuric acid until the reaction has become of an acid nature—that is, until the fluid colors blue litmus paper red. Take great care when doing this, not to breath the air, as the hydrocyanic acid escapes in the form of a gas. Then pour the fluid into a porcelain dish and let it evaporate, until it begins to dry. Now add slowly and carefully about one-fourth of the volume of the fluid of concentrated acid, and then heat.

MANY people who have no difficulty in reading a French journal or book find it a nuisance to translate the metric into English measures and weights. For such, the following rule may be useful. To convert grammes to ounces, avoirdupois, multiply by 20 and divide by 567. To convert kilogrammes to pounds, multiply by 1,000 and divide by 454. To convert litres to gallons, multiply by 22 and divide by 100. To convert litres to pints, multiply by 88 and divide by 50. To convert millimeters to inches, multiply by 10 and divide by 254. To convert metres to yards, multiply by 70 and divide by 64.

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Mechanical Ocular Defects.

Their Nature, Cause, Correction and Relations to Functional Nervous Diseases.

EDITED BY C. A. BUCKLIN, A. M., M. D., NEW YORK.

[The aim of the author is to produce a clear and thoroughly practical course of instruction on the subject of "mechanical ocular defects," which is entirely void of useless technicalities and within the easy comprehension of every thinking student without his having had any previous technical or mathematical education.]

THE SUBJECT of convergent squint as a means by which non-facultative hyperopes may obtain distinct vision, having been duly considered and its treatment having been described, we will consider other forms of ocular deviation.

The simple form of paralytic convergent squint is occasionally mistaken for the ordinary form of the disease. In paralytic squint the trouble is entirely independent of any error of refraction. The visual axis of one or both of the eyes becomes wrongly directed owing to the paralysis of an ocular muscle. Double vision exists or there is a history of its having existed for many years. When the straight eye is covered the deviating eye either makes no effort to become straight or it is very slow in doing so. These cases, during the first two years of their existence, require medical treatment, and they are not benefitted by special treatment until the diseased condition causing the paralysis has entirely disappeared. If it is then found that there is some permanent impairment in the function of the muscle the case may become a suitable one for surgical or optical treatment, as the following case illustrates:

Mr. V. contracted syphilis some twelve years ago. Six years later he developed paralysis of both of the internal recti muscles, producing "crossed diplopia." He was treated energetically for his syphilis and recovered from all manifestation of the disease in about two years. He was, however, left with permanent impairment of the internal recti muscles. At a distance he could maintain bi-nocular fixation with comfort at from three to five feet; when playing cards he could not converge sufficiently to maintain bi-nocular vision without the assistance of six degrees of prism divided between the two eyes, with the bases in. For any continued work at the reading distance he required the assistance of ten degrees of prism divided between both eyes. With these prisms he can overcome all the difficulties of bi-nocular fixation with comfort.

It is thus illustrated how even this class of cases may become proper subjects for some form of mechanical ocular treatment after the disease has passed and left a permanent muscular defect. In many instances the choice of means to remedy this trouble will be prisms, bases in. A simple tenotomy of the external recti muscles is the most satisfactory manner to treat cases of this description providing there is no other ocular defect present, the correction of which would make the use of glasses necessary.

Hyperopia is usually associated with and the cause of the ordinary variety of convergent squint. Myopia on the other hand is frequently associated with and the cause of divergent squint. This statement, however, regarding the association of divergent squint with myopia is not so frequently true as the statement is regarding the association of hyperopia and converging squint.

How myopia causes divergent squint to become established. The far point of distinct vision in many cases of myopia is so very close that it becomes very difficult to maintain the necessary convergence for bi-nocular fixation under these circumstances; the requirements for muscular exertion are far in excess of the possibilities, consequently one eye fixes while the fellow eye wanders outward because of its inability to remain in the required position for bi-nocular fixation. In most instances the use of simple concave lenses which remove the far point of distinct vision sufficiently to make bi-nocular fixation possible and comfortable, will remedy the divergent squint It will

be readily understood that the squint must be the result of requirements for fixation and not the result of a paralyzed ocular muscle, otherwise the concave lenses will be of no service.

Blind or amblyopic eyes in the young are liable to wander in any possible direction because the incentive to fix has been lost before the habit of bi-nocular fixation has become firmly e tablished. In adult persons the loss of the vision of one eye does not cause the affected eye to wander during bi-nocular fixation. Tenotomy is the only means by which this deformity can be overcome.

There appears to be a popular belief that prisms play a part in correcting the position of a deviated eye. Under no possible circumstances do prisms exercise any such effect. They are used in diplopia for overcoming the double vision ; they do this by changing the position of the retinal image to match the faulty position of the eye, but they never exercise any effect on the position of the eye or rather on the direction of its visual axis.

Slight vertical squints produce the most annoying forms of diplopia or double vision. The treatment of this class of cases with weak prisms base up or down as the case requires, proves more satisfactory than the treatment of any other ocular deviation by this means.

Convergent Squint is occasionally encountered in very high degrees of myopia. The individual who owing to a myopia of about ⅓, succeeds converging his eyes at this very near point which is his far point of distinct vision, never has any occasion to fix at a greater distance, the muscles become gradually adjusted to this as their natural position when at rest ; consequently both eyes are strongly converged inward. Either eye assuming the same position as a normal eye when fixing at a distance, the entire convergence appears in the other eye. It is readily seen that the converging eye must have made the same convergence as the other eye made movement in passing from the converging to the straight position.

When the disturbance between fixation and accommodation which causes squint is not the result of hyperopia but is caused by a defective ocular muscle resulting from a paralysis which existed years before, glasses are of little or no service before or after the operation ; while in squint resulting from hyperopia the glasses are necessary after the operation to keep the eyes from squinting, unless the operation has been overdone. In this latter case diverging squint usually developes during the first two years.

In convergent squint developed as the result of slight paresis of the muscles, the person has difficulty in locating the exact position of objects. This difficulty disappears immediately upon the correction of the diplopia by prisms or tenotomy.

Convergent Strabismus as a result of Thompsens Disease is generally acknowledged to have occurred but once, and although this case has since gone the rounds of the medical press of all civilized nations, I was the first to observe this special case and to call the attention of the medical profession to it. Thompsens disease is a peculiar congenital condition of the muscles. When the muscles contract they are rigid, hard and require several minutes before they can relax. This condition affected the internal recti muscles of the eyes in this case as well as every other muscle of the body. The continued efforts at convergence during bi-nocular fixation caused a continued spasm of these muscles. They finally shortened, drawing both eyes in. The individual had diplopia as a result, and lost his ability to fix the position of objects correctly. I did a double tenotomy as an experiment, this being the first time that this operation had ever been performed for this particular condition. The results were magical. The strabismus disappeared at once ; upon looking about immediately after the tenotomy, he found that his ability to locate objects had returned to him perfectly. Within eight weeks the difficulty of keeping his eyes straight has returned to a slight degree, and the operation will have to be repeated. No intelligent calculation can be made as to what muscles affected with this organic peculiarity will do. The treatment must consist of intelligent efforts to relieve the symptoms complained of. As it is a generally acknowledged fact that no other case of the kind has been observed, I shall watch this one with great interest.

CORRESPONDENCE.

Trenton, N. J., Nov. 3d, 1890.

DR. C. A. BUCKLIN,

Dear Sir : A young lady of about 25 years of age came to me for glasses; she has *convergent* strabismus and can use either eye and read $\frac{20}{40}$ each eye seeing alike while one of them is turned in.

Now Question !

With the opthalmoscope I get + 5, D. Hoperopia good and distinct + 6, D, blurs. Will A + 4, D, or + 5, D, bring her eyes straight without an operation ? If so, about what probable time will it take to do it, I tried + 4, D. She could not see clear, but the eyes did not converge so much, I put her off for a week and await your answer before promising anything, hoping to receive an early reply. She was not born cross eyed but it dates from a fever, at what age I did not ask her, as I thought it unimportant. Respectfully,

G. F. A.

If the + 4, or + 5, fully corrects the hyperopia she must fully relax her accommodation and convergence or she can not see distinctly. They usually learn to do this within five minutes. It may take a week before they learn that they can not see without giving up all unusual efforts at accommodation. When they relax all efforts at convergence, the eyes become straight unless the muscle has become so shortened that it is not long enough in its relaxed condition to allow the eye to assume its normal position. Under these circumstances the glasses must be assisted by a simple tenotomy of one or both of the internal recti muscles. The fever may have been the one factor which destroyed the relations existing between accommodation and fixation, but it would not have done so had not the hyperopia existed. On the other hand it is more probable with this degree of hyperopia that the fever had nothing to do with the case.

Bath, N. Y., Oct. 15, 1890.

DR. C. A .BUCKLIN,

Dear Sir : Please give your advice through CIRCULAR for the following : Miss F. aged 33;

R V $\frac{20}{40}$ w + 60 s ⊂ — 60 c ax 180 V $\frac{20}{20}$

L V $\frac{20}{200}$ w + 14 c ax 85 ⊂ — 14c ax 180 V $\frac{20}{50}$

Vision in R perfect for near and distant with above. In left all lines on astig-chart with above clear and black except horizontal which is clear but a little short on left side and Snellins test type regular in shape black, and clear to $\frac{20}{50}$—a + 72 s added helps a trifle, but cannot read a word with left—no other combination as good for left either for near or distant vision. My idea is that it is useless to put such very different lenses together, and that it would be best to correct the R eye as above and let the left go with a plain glass or anything to fill the frames and wear constantly, since no glass improves left for near vision—am I correct? Would be obliged if you would find time to drop me a line with your opinion and you can answer in full in THE CIRCULAR. Very truly yours,

W. P. S.

Miss F is decidedly out on her judgment. The formula as it now stands + $\frac{1}{6}\frac{1}{0}$ = — $\frac{1}{6}\frac{1}{0}$ c ax 180 reads simply + $\frac{1}{6}\frac{1}{0}$ c ax 90. These two combinations are the same. Left eye, Miss F has a perfect right if she desires to accept + $\frac{1}{1}\frac{1}{4}$ c ax 90 = — $\frac{1}{1}\frac{1}{4}$ c ax 180. When she accepts them at any other angle the cylinders she is using are no longer fourteen cylinders. The slight error however of five degrees may be oue to the frame or a faulty mark on the glass. The fact however remains that + and — cylinders change their power when the angle between their axis is less than 90. Five degrees, however, would not be much of a change. The writer's conclusion that it is useless to try and correct a faulty eye with such reduced acuteness of vision is entirely sound and beyond criticism.

Miami, Mo., November 9, 1890.

DR. C. A. BUCKLIN,

Dear Sir : Will you please give me a few examples of compound and mixed astigmatism. How to prescribe for either one of them, what meridian to put the cylindrical lens and directions to *substract* or *add* in either case. Do they use the dioptric system in Norway ? Hoping to hear from you soon.

Respectfully J. K.

The writer will find the subject fully considered under Astigmatism in some of the back numbers of the CIRCULAR.

In *compound hyperopic astigmatism* we have one of two conditions present. Either hyperopia is joined to hyperopic astigmatism or both curves of the cornea are too flat; one exceeds the other in flatness.

In *compound myopic astigmatism* the reverse condition exists, the corneal curves are sharper than normal. In either case the patient accepts a spherical cylinder which corrects the meridian of weakest refraction; a cylinder of the same kind is to be added to complete the correction in the meridian of greatest refraction. The axis of the cylinder is determined by direct experiment before the patient's eyes. Convex cylinders are usually used at or near 90 while;—cylinders are usually used at or near 180.

In mixed astigmatism a spherical lens is never accepted in the direct trial because the eye is hyperopic in one meridian and myopic in the reverse meridian; consequently the + or — cylinder which produces the greatest improvement at 20 feet is selected. This is then crossed at right angles with a cylinder of opposite value. Having obtained the two cylinders required they are transposed into a sphere and a cylinder which produces the same effect. Rule: Bring either cylinder down as a sphere and the sum of the two cylinders for a cylinder retaining sign and axis of cylinder which was not brought down thus + 2. c ax 90 = — 1. c ax 180 would read + 2. = — 3 c ax 180; or, —1. = + 3. c ax 90; any one of the three lenses would work equally well. In compound and mixed astigmatism the radiating lines do not give reliable information as to the probable position the axis of the cylinder will take.

The class in optics for October consisted of the following gentlemen: Edmund Lindsey, Johnstown, Pa.; Luther E. Higley, Philadelphia, Pa.; Jesse K. Platt, South Norwalk, Conn.; Wm. H. Rowell, Woodbury, Conn.; Elmer Sanborn, New York. A strong effort will be made to form a large class for January 10th. Those desiring to join this class will assist me greatly by applying as early as possible.

How to Make a Pivot Drill.

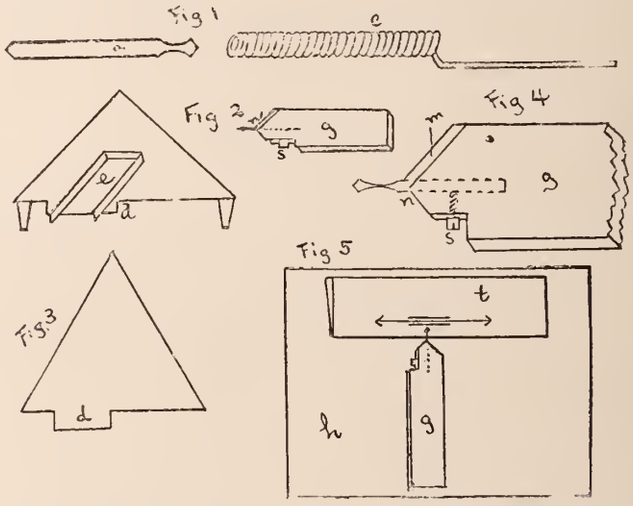
BY JOHN H. STARBUCK.

THE usual method of making a pivot drill and of drilling a hole for a pivot is as follows: After turning the staff in the cement chuck, stoning off a smooth face on the end of the stump and centering, fasten a fine needle in a pin vise (one of the old fashioned vises if possible) and heat it red hot so as to draw the temper and file it down to a long slender point; then rest the end of the needle on a stake and hit it a blow with a hammer so as to spread it. With a file, point the drill and form the cutting edges, then heat it red hot again, in a lamp flame or with a match and either wave it quickly in the air or insert it into a piece of wax; afterward sharpen the cutting edges on an oil-stone. You are ready to begin work. As the drill is pressed into the end of the staff it commences to cut, and perhaps continues to do so until it has reached the broadest part of the drill; there it stops cutting. You now clean out the hole, and go over the same operation again. When a few more chips are taken out or perhaps when the hole is half drilled, you suddenly hear the ominous click and you know the end of the drill is broken off in the hole. The staff is now cut off at the nut shoulder, a larger hole is drilled, and after the plug has wriggled our two or three times and the various expedients of oil-stone, powder, acid, or perhaps solder have been tried you will succeed in getting your pivot set.

Now this is *not* the way to make a drill or drill a hole for a pivot; it is all wrong, yet I know I am not exaggerating when I say that two out of three watch repairers in the country proceed in just this manner.

The first mistake is in the selection of material for the drill; needles are worthless for either drills or pivots. The best material is that sold by material dealers as pivot wire. Instead of filing it, place it in the lathe and turn it to the shape shown at Fig. 1. It is a great saving of time to make one or two dozen drills at a time, turn them up, harden them in a steel box packed with brass or iron filings and grind them to shape. Twenty such drills that will drill holes for 100 pivots or more can be made in an hour. If you have a wheel cutting attachment and a large index plate to your lathe, you can grind them to shape very rapidly, but the method I will describe here refers to the making of a single drill.

In turning the wire to the shape shown, do not make the drill too long; twice the length of the pivot is ample; when done cut the



drill off in the lathe about 1 cm long, then take coarse binding wire (No. 26 or 27) and wind a close spiral around a piece of the pivot wire making the spiral a little longer than the drill, and leave enough wire projecting to form a handle as designated by *c*; into this spiral place the drill, which being made of the same size wire will exactly fit, and pinch the ends together with pliers; then cover the whole with a paste of castile soap, heat to a cherry-red, holding the spiral by the projecting end of wire, and quench in snow water or salt and water. Upon unwinding the spiral, you will find the drill blank as hard as fire and water can make it, and white without a scale. If judgment has been exercised in heating, the steel is not burned.

The tool shown in Fig. 2 consists of a triangular piece of sheet brass with sides about 5 cm long and having a leg at each corner. In cutting out the brass triangle, leave a projection on one side, (*d* Fig. 3), to be bent down to hold the piece *e*, which is of thin sheet brass, with sides bent at right angles to form a kind of trough; this should be about 2.5 cm long and 1.5 cm wide; *g*, Fig. 2 is of No. 9 sheet brass made to fit in the trough, *e*, so it will slide easily. File the end of *g* to the shape of a drill, making the angle, *n*, 100°, and the cutting angle 65° to 70°; drill in the point *n* and exactly in the center, a hole of the same size as the drill wire and deep enough for the entire body of the drill to go into; fit a screw, *s*, to hold it in place. Now bend out slightly the lip, *d*, and solder the piece, *e*, to it at such an angle, that when the triangle stands on its legs on a flat surface, (*m*, Fig. 4) or what represents the cutting angle of the drill it will lie flat and be parallel with that surface.

On a glass plate, *h*. Fig. 5, cement a wedge-shaped piece of oil-stone, *t*; fasten it to the plate at such a height and such an inclination that when the piece, *g*, holding the hardened drill blank, lies flat on the glass plate, the side of the drill will rest on the oil-stone, as shown in Fig. 5; move *g* backward and forward in the direction of the arrows until one side of the drill is ground flat, and then turn *g* over and grind the other side. By this method the sides of the drill are made perfectly flat and parallel. Without removing the drill, place *g* in the trough of the triangle and grind it on a roughened glass plate with emery, or on an oil-stone, first one cutting face and then the other. When finished you have a drill that is perfect in form and with correct cutting angles.

The tool I have described for making the drill is also of the greatest convenience in sharpening them after they have been dulled by use; for by laying *g* on the glass with the side of the drill resting on the stone, it will assume its original position, after which the screw can be tightened to hold it in place while both the sides and edges are being reground.



Artificial Eyes.—Celluloid artificial eyes are cheaper than those of glass, and have a good appearance; but Dr Meurer, of Lyons, says that after three or four months they are liable to cause serious irritation, probably as the result of some chemical change. He has repeatedly seen this inflamation allayed by simple antiseptic treatment after the removal of the celluloid; but reappearing, however, as soon as the old eye was re-inserted, though remaining absent if a glass eye was substituted.

The Eyesight of Oculists.—The Berlin *Tageblatt* publishes the following episode of the Medical Congress: At a dinner of the oculists, members of the International Medical Congress, Prof. Hermann Cohn, of Breslau, surprised his colleagues by submitting a tabular statement on the strength of sight and refraction of the eyes of oculists who had been present at a similar gathering at Heidelberg 20 years before. The most prominent members of the Congress had each written in a list both his name and the strength of sight of right and left eye. Of the 44 oculists, 32 had full, 10 supernormal, and only 2 less than full sharpness of eyesight. 28 were shortsighted—that is 61 per cent. The concave glasses used were between the old inch numbers 5 to 24; at an average, however, the degree of shortsightedness was small, so that about No. 20 sufficed.

Lost a Million.—A gentleman was recently traveling from Frankfort to Vienna. Between two certain stations, a package dropped out of his pocket and fell from the window. This package contained a number of jewels, representing about one million marks ($230,000). He suddenly jerked the cord of the electrical stopping apparatus, and the train was brought to a stand. Giving his name, he hastily left the train, which started again, and searched for his package which he was lucky enough to find. Out of pure joy, he distributed all his loose change to the crowd at the next station He paid the fine of 30 marks for willfully stopping a train.

Rise in Silver Watch Cases.—The "Intercantonal Society of the Jurassian Industrial, of Switzerland," [there, every word of it is down], being the official organ of the Swiss watch case industry, has resolved that in consideration of the gradual rise in the price of silver, which stands at present 25 per cent. above its old quotation, silver watch cases should rise correspondingly, and the price per case is to be 1 mark higher than heretofore. A further rise is anticipated.

Cessation of Watch Smuggling.—In 1885, the Empire of Germany laid a heavy duty on foreign watches—Swiss, French, etc., to protect home industry, but found to its cost that an extensive system of smuggling was at once inaugurated; in spite of vigilance, an effect quite contrary to "the protection of home industry" was produced, and the government finally becoming weary of this incessant watchfulness, has concluded a commercial treaty with France and Switzerland, according to which a very low rate of duty is paid on watches, and the profit is too small to be renumerative to smugglers.

Standard Time.—It appears that the introduction of standard time into Germany has passed another stage toward realization. The society of German railroad administrators recently held a meeting on the subject, and the royal governments and chambers of commerce have been asked to consider the question, whether it would be advisable to introduce standard time for the entire population of Germany by way of passing suitable laws in the Reichstag.

Decision.—According to the judgment of the Imperial Supreme Court of Germany, rendered a short time ago, a purchaser who buys an article on instalments and is placed in possession at the first payment, commits no crime if he pawns it before the final payment is made.

Dyed Diamonds.—The idea of dyeing off-colored diamonds with aniline solution has finally wended its way to Germany; a correspondent of the *Goldschmidtkunst* complains that he was basely deceived into buying yellow and brown diamonds colored with aniline, which revealed their true color when washed. Two rogues effected this sale, one of whom was caught.

Honors.—Adrien Philippe, the principal founder of the present world-renowned horological firm of Patek, Philippe & Co., of Geneva, Switzerland, has been made a Knight of the Legion of Honor.

Medals.—The distribution of the medals of the French Exposition is at last to commence. The Administration of the late Universal Exposition gives public notice that the French exhibitors in the classes 1 to 44, if they have been voted either a silver or a gold medal, to come forward to receive it. The distribution of the diplomas and bronze medals will be commenced a week or so later The medals and diplomas will be delivered either upon claiming them personally or upon the presentation of duly authorized writing.

Rapidity of Electric Current.—The Greenwich Observatory recently opened telegraphic communications with the observatory of Mr. M'Gill, of Montreal, for the purpose of ascertaining the rapidity of the electric current. It was found that the passage of electric signals between these localities occupied about three-quarters of a second. The distance between them is seventy-four degrees of longitude, or about 3000 miles.

Amber in America.—White amber has been discovered on a 100-acre field in Bedford, Ont. The owner of the property has declined an offer of $10,000 for it. He demands double that sum.

Moltke's Birthday.—Emperor William has as a birthday present sent to the Count von Moltke a marshal's baton, set with diamonds ornamented with the imperial eagle.

Mother-of-Pearl Trinkets.—It can readily be supposed that the passage of the McKinley bill would work great mischief with many flourishing trades in Europe. The mother-of-pearl industry notably is one of these industries, and our American market ceasing to be a source of profit, the Countess Taaffe and other society leaders are commencing to set the fashion of wearing mother-of-pearl trinkets. An exhibition for ladies of the various styles of dressing the hair was opened in Vienna on Oct. 17, the object being to display an assortment of mother-of-pearl ornaments, clasps, pins, brooches, and combs suitable for coiffures, and in this manner to find employment for the now impoverished workers. A most noble work, ladies; "charity begins at home." "Lo, ye have them always with you," and we in a like manner have them with us.

Why Platinum is Dearer.—Complaints are frequently heard from parties interested, that platinum is dearer now than it was wont to be, and all manners of reasons are assigned. The fact is that the price is regulated at the mines in the Ural mountains of Russia. Formerly the metal was considered useless and thrown away, while now the mine owners are beginning to find out its value and to keep it at a good stiff price. Added to this is the increased value of the Russian rouble, which has of late years risen more than 50 per cent., owing to the better condition of the finances of the Empire of Russia.

Tell Tale Clock.—The old St. Paul's clock, of London, once struck thirteen, the incident being produced by the following occurrence. Before the time of the erection of the present St. Paul's Church, and as long ago as the reign of Henry VII., there is on record a well-attested story of a young girl, who, going to confession, was importuned by the monk then on his turn in the building: quickly escaping from him up the stairs of the Great Clock Tower, the girl raised the clapper or hammer of the bell of the clock just as it had finished striking twelve, and by means of the roof eluded her assailant. When accusing the monk as soon as she reached her friends and home, she called attention to the fact of the clock having struck thirteen at the time; and upon those in the immediate neighborhood of the Cathedral being asked if so unusual a thing had been heard, they said it was so. This proved the story, and the ecclesiastic was degraded.



Hardening Casts.—Plaster-of-paris is made hard enough for a mold for metal casting by the use of 10 per cent. of alum in the water used for mixing the plaster.

To Strip Gold.—Gold is taken from the surface of silver by spreading over it a paste made of pulverized sal-ammoniac with aqua fortis, and heating it till the mixture smokes and is nearly dry, when the gold may be separated by rubbing it with a scratch brush.

Jewelers' American Cement.—Isinglass soaked in water and dissolved in spirits, 2 oz. (thick); dissolve in this 10 grains of very pale gum ammonia (in tears), by rubbing them together; then add 6 large tears of gum mastic, dissolved in the least possible quantity of rectified spirits. When carefully prepared, this cement resists moisture and dries colorless. Keep in a closely stoppered vial.

A Defect.—Always examine the pendulum wire at the point where the loop of the fork works over it. You will generally notice a small notch, or at least a rough place worn there. Dress it out perfectly smooth, or your clock will not be likely to work well. Small as this defect may seem, it stops a large number of clocks.

Melting and Refining.—In melting brass gold, urge the fire to a great heat and stir the metal with the long stem of a tobacco pipe to prevent honey-combing. If steel or iron filings get into gold while melting, throw in a piece of sandiver the size of a common nut; it will attract the iron or steel from the gold into the flux, or else sublimate of mercury will destroy the iron or steel. To cause gold to roll well, melt by a good heat, add a tablespoonful of sal ammoniac and charcoal in equal quantities, and both pulverized, stir up well, put on the cover for two minutes, and pour.

To Clean Brass.—Make a mixture of one part common nitric acid and one-half part sulphuric acid, in a stone jar, having also ready at hand a pail of fresh water and a box of sawdust. The articles to be treated are dipped into the acid, then thrown into the water, and finally rubbed with the sawdust. If the brass should be greasy, it is first to be dipped into a strong solution of potash or soda in warm water; this cuts the grease, so that the acid has free power to act. This method is prescribed for cleaning brass, for use in all the U. S. arsenals, and is claimed to be the best in the world.

Acid Coloring Solid Gold.—Saltpeter, 2 parts; salt, 1 part; hydrochloric acid, 1 part. Put saltpeter and salt into the coloring pot, and heat it without water, then add hot water enough to produce a thick paste, let it boil, add the hydrochloric acid, and stir it up well. As soon as the brown vapor arises, plunge in the work quickly, being careful to submerge it completely (since the vapor will affect the work if exposed to it). Let the work boil over a quick and lively fire (and preserve this during the whole process), for about three minutes, stirring it about constantly, taking care not to let any part of it come to the surface of the liquid. Then raise the work in a light pickle, and thereupon plunge it into hot water Quick and careful handling in dipping and taking out the work is important. This done, the acid color should be thinned by adding hot water, one-half old color, which is preferable. Submerge the work again, let it boil two minutes, and should some pieces require it, they should boil one minute longer. Now boil the work in a pickle of two thimblefuls of hydrochloric acid to one gallon of water, then again in a pickle containing only a few drops of acid, then dry off the work carefully in hot sawdust. Work not properly dried will draw spots.

Silver Plating by Rubbing.—Freshly deposited chloride of silver, well washed with hot water, is mixed in equal proportions with table salt and cream of tartar, until it becomes a batter, water being added if necessary. The article to be silvered is first cleansed with a good, stiff brush and a solution of soda and soap, and thoroughly rinsed to remove any dirt, and again rinsed with hot water. It is to be recommended to submit it to a dry cleansing of pulverized and washed chalk, pumice-stone powder, or quartz powder. When well rinsed with cold water, make a bale of loose cotton wrapped in soft muslin, and with this coat the wet article with a thin layer of salt; then rub some of the silvering matter on to it until the whole article under treatment is well silver-coated, When this has been satisfactorily done quickly rub with a little ball some cream of tartar upon the silvering, and wash. The silver deposit will be found handsome, clean, and as white as snow.

Silvering Without Battery.—Silvering by contact is not as durable as by battery, although the color is the same. The solution is prepared as follows: Take 1 part chloride of silver, 6 parts prussiate of potash, 4 parts purified potash, 2 parts salt, 4 parts caustic ammonia, 4½ parts rain water. First prepare the choride of silver, next dissolve the prussiate of potash in water and add it, then the potash, salt and ammonia, and boil the whole for one-half hour in a porcelain vessel, filter, and the fluid is ready for silvering. The utmost cleanliness is a primary condition of this method. Heat the fluid up to boiling, then introduce the article together with a piece of clean zinc. Take it out after a few minutes and put it back again into the solution, in which leave it for three or four minutes. Then brush again, and continue this until it is sufficiently silvered, This silver will bear polishing with the steel, and takes a nice black luster. Articles thus silvered cannot be distinguished from silver articles. It is very good to protect galvanic casts against dimming, but when silvering, no more must be taken of the fluid than will be used.

To Silver the Inside of Hollow Glass.—Covers, mirrors, reflectors, globes, hollow glass vessels, etc., can quickly be silvered with the following amalgam, which becomes fluid at a very low heat and adheres to glass. Lead and tin, each, two ounces; bismuth, two ounces; mercury, four ounces. Add the mercury to the rest in a melted state, and then take from the fire; mix with an iron rod.

Frosting Polished Silver.—Cyanide of potassium, one ounce, dissolved in one-half pint of water. Do not hold the silver in your hand, but use boxwood plyers, and apply the mixture with a brush to the surface.

To Preserve Pencil Drawings.—Pencil drawings may be preserved by pouring over them, when stretched upon the drawing board, a thin solution of gum arabic or the white of an egg, dissolved in dilute ammonia water by agitation with broken glass.

Barrel Arbor.—The most effective form of barrel arbor and ratchet is the old form, now disused, but for what reason it is difficult to tell; but it seems the law of change governs watchmaking, even if there is no improvement. The only ratchet and click not liable to failure is that seen in old Swiss watches, with the ratchet held by three screws screwed into the steel barrel arbor, which gives the best possible hold for them, and this part of the arbor also forms the pivot and bearing for the arbor's support to the bar. Its large circumference prevents wear, and the effects of wear do not cause so much motion of the barrel extremities, while the pressure during winding is not on the hole and its thin sink, but on the large circumference embraced by the ratchet; its superiority is shown by the fact that watches with this form of ratchet with fifty years wear are often seen in sounder condition in this part than modern watches and barrel arbor's with only a few years' wear, and any damage to modern ratchets involves a new entire arbor, the ancient form involving only the replacing of the ratchet if damaged in teeth by a new one, which if skilled with the file, the repairer could make himself from a piece of round steel fitted tightly on the winding squarely opening with a brooch; then the screw holes marked or drilled through the holes in the arbor; then reopened larger to let the winding key through the ratchet; then two fine circles turned for size top and bottom of the teeth, and a three square file used to cut the teeth, great accuracy in which is not requisite for effectiveness, as the click will follow any sort of teeth in this arrangement and be effective.



Proceedings of the Watchmakers' and Jewelers' Union.

[NOTICE.—We shall be pleased to receive and discuss descriptions of new tools, attachments and improvements in any branch of our trade, and publish them free of charge; also inquiries for those desiring information on any point of general interest. Communications should be written as concisely as possible consistently with clearness, on only one side of the paper, and be received here by the 10th day of the month, in order to be discussed at our meeting for that month and inserted in the next issue of THE CIRCULAR. Address them to "Secretary of the W. & J. U., care of THE JEWELERS' CIRCULAR, 189 Broadway, New York." For full information for correspondents, see our Proceedings in THE CIRCULAR for October, 1889.]

Fourteenth Meeting.—Reported by the Secretary.

The attendance at this meeting was quite large, and an interesting discussion was had upon subjects of practical value to the trade generally. The first letter read was upon the subject of

BORING HOLES IN GLASSES FOR DUPLEX WATCHES.

Georgetown, D. C., Oct. 21, 1890.

Secretary of the W. & J. U.:

I have a good deal of trouble in boring holes for hand and winding posts through the glasses over the back of duplex movements. I sometimes crack all I have of the proper size, and have to take a larger glass and grind it down. A friend tells me there is a way to perforate them without boring at all, by some kind of melted metal. Will you please tell how it is done, in your next month's Proceedings? I don't want any instructions in boring, for I don't want to bore them, but do it in some better way, if there is any.

Yours respectfully, TRYON.

MR. RUBY PIN was requested to impart the desired information. He said he practically knew of no way for making the holes for that purpose except by boring them. But as Mr. T. did not want instructions on that point, he refrained from giving them. There was also a way of cutting glass, by making a scratch with a diamond, or the corner of a file, where the cut is to begin, then heat a piece of iron pointed like a small soldering iron to a red heat, put the point just at the scratch, and draw it backward as fast as the crack in the glass will follow it. Of course the hot point is to be moved just where the crack is wanted. It is a little difficult to cut out a round piece that way, and when the holes were as small as in this case he hardly thought it could be done.

There was still another way that he had heard of, but had never seen tried. It was to put a gob of stiff putty or wet clay on the glass, with a hole through it just the size of the hole you want through the glass, then pour into it a little melted lead, and it is said that the uncovered spot of glass will drop right out. The idea probably is that the lead heats the glass it touches and expands it, while the wet clay keeps the surrounding portion of the glass cool. The hot and cold portions separate, and the weight of the lead pushes the round piece through. If the glass is rather thick, the clay should probably be thicker also, and hold more lead, or the hole should be larger. Mr. T. might experiment on pieces of glass, to see how this works. If he has no putty or clay, he could mix up some plaster of paris and water and that would probably do as soon as it was hard enough to keep its shape.

HOW TO WASH CHAMOIS SKINS.

Boston, Mass., Nov. 3, 1890.

Secretary of the W. & J. U.:

At one of your meetings some time ago Mr. BENCHMAN (I think it was) said that chamois skins should be washed whenever they are dirty. I have washed mine, and they are as hard as a board and scratch almost like a file. They were a good deal better when they were dirty. Now they are no good at all. Is there any special way of washing them? If there is, kindly explain it at your next meeting, and say if those I have washed can be restored and made soft again.

DISAPPOINTED.

Mr. BENCHMAN responded to this letter and said that the way to wash chamois skins was simple enough but was some bother, and it would hardly pay to wash just one or two. Better wait till you have several. Then make a weak solution of soda in warm water, about as strong as is used for washing any greasy rags. Rub soft soap liberally on and into the leather, then put it in the soda solution to soak for two hours. Then rub it well till it is quite clean, then rinse it well in another solution of soda and yellow soap in warm water, similar to the former solution of soda. Spread it out on a coarse towel, and wring them well while together. Dry quickly, then rub and brush it well, and it will be found to be clean, soft and smooth. If it scratches it has not been brushed enough to get the particles of grit or dirt off. Take a clean brush and clean rouge and brush it thoroughly over the whole surface, and it will then give a fine polish free from scratches.

Our correspondent says his skins are hard. Probably he rinsed them out in water, to finish off with. That should not be done. They should be wrung out and dried just as they come from the soap solution just spoken of. It is supposed that the small quantity of soap left in the skin by doing so is the cause of its softness when dry. Some say that the soap on the fibers of the leather enables them to slide over each other, and makes it soft and smooth like silk. But however that may be, the presence of the soap is known to be necessary, to make the skins soft, and if our friend will follow these directions he will be successful next time. Treat those he has already washed in the same way.

THE HANDS OF THE WATCH CATCH TOGETHER.

Henderson, Ky., Oct. 10, 1890.

Secretary of the W. & J. U.:

I have an ordinary detached lever watch, which gives me no end of trouble with the hands catching together. The minute and hour hands tip down, and the second hand sticks up. Something will catch in spite of all I can do. I may say that there is not much room between the crystal and the dial. Tell me what to do, if you can. B. J.

P. S.—I do not want to go to any great amount of work on the watch—no more than taking the dial off, or the like of that. I have only the bow-lathe to work with.

The Chairman allotted this question to MR. EXPERT, who said he imagined that Mr. J. was making a great mistake in trying to cure this trouble without doing much to the watch. He had probably already spent double the time that would have done a thorough job, and he would advise him to do that now. The only right course is to first upright the center and the fourth wheels, so that the hands will all stand level. It will do no good to bend the pivot or second hand, nor the center staff. The pinions of the wheels must stand vertically to the plate, and stay so, and the fourth wheel pivot and center staff must be straight. Next the dial must be secured to the plate—not loosely, shaking up and down, but tight. The hour wheel should have just shake enough to be free, when the center wheel is pushed up; the thickness of the third wheel pivot is ample motion for any watch, and half of that is enough for a good one. If it has more play than that, fit a foil-washer over it to keep it in place. But, before leaving it, push the centre wheel to its highest point to see if that pinches the hour wheel against the dial—for it must of course be free at all times. The same amount of end shake is enough for the center and fourth wheels, and they should be corrected if they have more. All this may be called putting the watch in order, for it should be fixed that way, whether the hands make trouble or not.

Now we come to the hands. Usually, it should be easy enough to avoid any catching together. But sometimes there is hardly room enough for them to move in, and perhaps Mr. J.'s watch is one of this contracted sort. First put on the second-hand as low as it can be without touching the dial at the socket, and watch during one revolution to see if the point touches the dial anywhere—gently pressing on the socket to keep the hand down to its lowest point

Bend the hand down, at both sides of the socket, to run close to the dial but not touch it. If it tips, then it must clear the dial where it tips lowest. Do not leave it till you have got it so. In very troublesome cases the second and hour hands can be shortened, which will reduce the height that they can stick up. The rule is for the seconds hand to reach just over but not beyond the dots; the hour hand reaches nearly to the middle of the figures, while the minute hand reaches beyond the figures to the dots. In bad cases the seconds hand can be shortened $\frac{1}{16}$ inch, or even more, with an hour hand which barely reaches to the figures.

The hour hand is usually put on pointing about to the XI., then with the key turn forward till it points exactly to the dot of the XII., and put on the minute hand exactly over the dot. But a better way, when you expect interfering hands, is to put the hour hand on over the VI., press it to its lowest point and raise the seconds hand to its highest, watching while it passes under the hour hand at the 60, to see that it clears safely. Then with the key keep the hour hand over the point of the seconds hand as the latter revolves through an entire turn, to be sure that it clears the hour hand at every part of its circle. Lift the second hand to its highest position while trying this, say with a fine knife-point at its socket, not *prying* it up, but gently lifting. Adjust the hour hand as low as can be without interfering with the seconds hand. When you have become sure that they will not catch, by trying them turn after turn, these two hands are right. Next with the key turn till the hour hand points to the dot of the XII., and put on the minute hand. The hour hand must not be disturbed, but the minute hand must be bent and made to clear it, when the centre staff is pressed down and the hour wheel lifted up, each to its extreme position. Then put the movement in the case, with the crystal on, and see if the point of the minute hand touches the glass. If so, bend it down till it clears, but do not alter the part over the hour hand. If it touches the dial, clip off a trifle of it. Then turn with the key till it stands over the VI., to see if it interferes with the seconds hand at the 30, also if it touches anywhere. Do not take anything for granted, but *look* and see, at five or six places around the circle. If it will touch the glass, after you have done all you can to avoid it, and especially if the part over the hour hand touches, fit a higher crystal. When you have done all this thoroughly, you may feel secure against any catching of the hands, if it is a half-way decent watch. If it is a "plug," write to us again.

The Chairman commended MR. EXPERT for the thoroughness with which he had answered this correspondent.

WILL THE CYANIDE BATH EAT INTO JEWELRY?

Pittsburgh, Pa., Sept. 22, 1890.

Secretary of the W. & J. U.:

I use solution of cyanide potash to clean the tarnish off from jewelry. Is there any harm in leaving the jewelry in a long time? My boss says it dissolves the metal, but I have always been told that it only dissolved off the tarnish. Please decide this.

OMAR.

MR. ELECTRODE replied that the action of the cyanide was to dissolve the oxide of the metals, which is the tarnish, and not to dissolve the metals themselves. But sometimes a sort of galvanic action takes place in the bath by which the metals are corroded or oxidized. Then there would be a continuous process of the metals being oxidized in the bath, and this oxide being dissolved off by cyanide, the result of which would be to eat holes through the article if continued long enough. It is better, therefore, to remove the article as soon as the tarnish is gone, and wash it thoroughly.

The Secretary then displayed to the members the unique business card of a Western member, C. E. Rose, of Ouray, Colo. The illustrations represent the obverse and reverse sides of this card. "The engraving" said the Secretary, is known as an Albert-type, and as you see closely approaches a photograph in appearance. Our Western brother is undoubtedly a firm believer in advertising, for he seems to accept every opportunity to place his name and business before the public. On the ticket envelope of the local opera house appears his advertisement with the engraving on his business card as a sort of trade mark. Mr. Rose sent us also these beautiful photographs, and he displayed a series of photographs of the "Gem of the Rockies," in one of which the jeweler's store formed a conspicuous feature. "To popularize one's business," said the Secretary, "is to increase it; and it is through such mediums as our friend utilizes that that end is attained."



OBVERSE SIDE.

OURAY, THE "GEM OF THE ROCKIES."

In the heart of the famous "Gold Belt," the richest mining section in the State. The best summer and winter resort in Colorado. Magnificent mountain scenery, beautiful mountain drives, mineral hot springs, climate unsurpassed. Take the trip; "Around the Circle," 1,000 miles, via the D. & R. G. R'y, the "Scenic Line of the World," viewing the principal mountain scenery, passes, canons, gorges, valleys, mining camps, etc., in the State, including the "Toll Road" above Ouray, the grandest mountain road in the world, blasted out of solid quartzite. Fare for the round trip from Denver, $28.00. For health, wealth, enjoyment unlimited, and the grandest scenery on earth, visit Ouray.

Cities and Towns in Colorado.	Pop.	Ele.	Dist. from Ouray	Cities and Towns in Colorado.	Pop.	Ele.	Dist. from Ouray
Alamosa.....	1,200	7,546	302	Marshall Pass	Divide.	10,856	146
Aspen.....	6,500	7,868	368	Montrose.....	1,500	5,311	35
Buena Vista...	1,800	7,970	197	New Castle	300	5,560	332
Canon City ...	2,500	5,343	228	Ouray.....	3,500	7,640	——
Colorado Spgs.	10,000	5,982	313	Palmer Lake...	150	7,237	336
Denver	130,000	5,195	388	Pueblo	25,000	4,667	268
Durango.....	3,500	6,520	74	Red Cliff	1,000	8,671	255
Florence.....	1,000	5,199	236	Salida.....	3,000	7,049	172
Fort Crawford.	400	6,182	26	Sargent	200	8,477	130
Glenwood Spgs	3,000	5,768	322	Silverton.....	2,500	9,224	29
Gunnison	2,500	7,683	98	Trinidad.....	6,000	5,994	358
Grand Junction	1,500	4,594	107	W'g'n Wh'l Gap	50	8,449	459
Lake City	1,500	8,604	109	Walsenz	1,000	6,189	354
Leadville.....	20,000	10,200	233	West Cliff.....	800	7,864	261
Manitou	1,300	6,318	318				

Diamonds, Watches, Jewelry, Silverware, Clocks

NATIVE JEWELRY, ETC. ROCKY MT. VIEWS A SPECIALTY.

C. E. ROSE, THE JEWELER, OURAY, COLO.

HOTELS.

BEAUMONT. DIXON. DELMONICO.

REVERSE SIDE.

The meeting then closed.

Neglected Problems.*

No. 2.—Part VII.

WHEEL AND PINION GEARING AS LEVERS TRANSMITTING POWER.

By "Excelsior."

(*Continued from Nov.* Circular, *page 45.*)

(This article has appeared in the January, July, August, September, October and November issues.)

IN THE preceding article we arrived at a method of determining precisely where the tooth should touch the pinion leaf, in every position that it can assume, in order to act upon it with an equal force in all of its positions. That method consists in giving to the radii of the wheel and pinion such *virtual lengths* in each position (by proper places of contact between them) that they shall retain the same ratio that they had when touching on the line of centers, *i e.*, the same ratio as their pitch diameters. If this pitch diameter of the wheel is 5, 6 or 8 times that of the pinion, their *virtual* lengths must be in the same ratio in every position during contact, no matter what their actual lengths may be in the different positions. Of course, teeth in actual work do not have the shape shown in Fig. 35, but that form was chosen to make more clear the method of finding the virtual length of the levers. It was also stated that those levers did not retain the same ratio in length which they had at the line of centers, but that it would be easy to give the point of the tooth such a curve that they would do so, and we now show how to find such a curve for any case.

Requirements of a Perfect Gearing.

In mechanical treatises it is generally stated that the principal requirements of a perfect gearing are: 1. that the contact should begin on the line of centers; 2. the tooth should have a rolling and not a sliding pressure against its leaf; and 3, that the tooth, for equal angular distances moved by it, should move the leaf through equal angular distances, as long as contact continues. The first requirement cannot be met with low numbered pinions. As for the rolling contact, inspection of Figs. 33, 35 and 38 will show that such a contact is out of the question. In every case the tooth slides or rubs over the leaf more or less, although by properly curving the tooth the rubbing contact can be shortened. Even with a 12-leaf pinion, the rubbing (see Fig. 38) extends from the point 7 on the tooth to 7 on the leaf, and the rolling will be from 7 to the end of the tooth at *f*. As regards the third requirement, it is evident that it might be met, and yet the gearing might not transmit a constant amount of power in the different positions. In Fig. 38, for instance, the working radius of the pinion remains the same, but that of the wheel becomes shorter; and in Fig. 35 the radius of the wheel is five times that of the pinion when they touch at *1*, but 9 times as long when they touch at *c*. Can it act on the pinion with the same power in both cases? There is evidently another important requirement, and that is, that the ratio between the lengths of the *virtual* radii of the wheel and the pinion must remain the same during the period of contact.

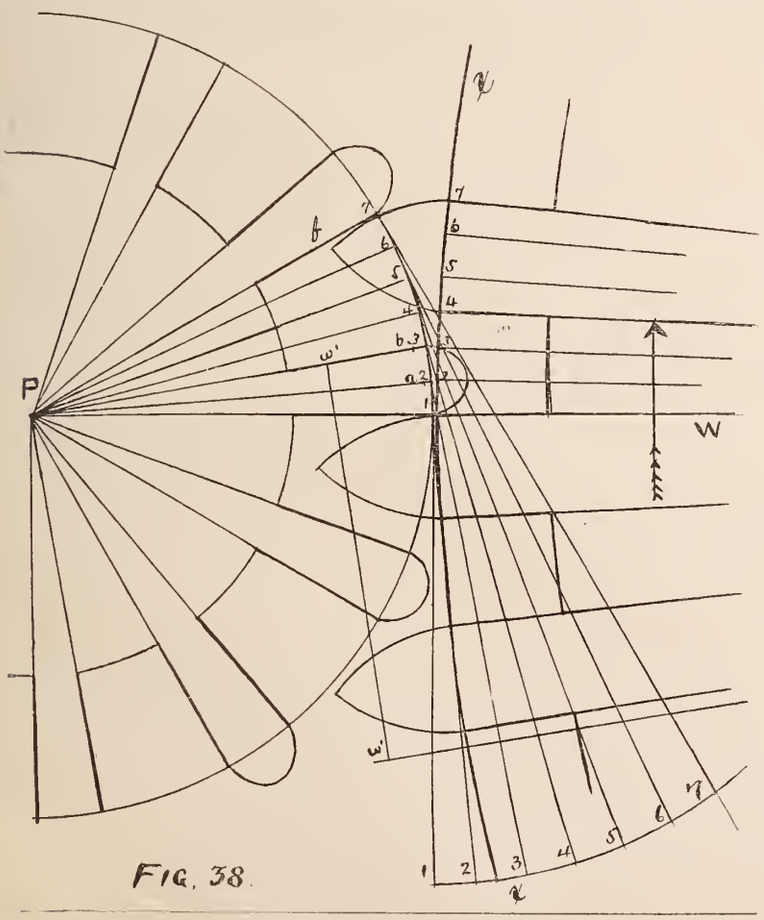


FIG. 38.

Fig 38 represents a section * of a wheel of 60 teeth, driving a pinion of 12 leaves, which is as large a number as is likely to be used in watch work, and reduces the angle during which contact lasts to 30° for each leaf. To the eye the tooth seems to be pretty well formed, but tested by our rules it has a very poor form indeed. The point (by which is meant the curved portion, outside of the pitch circle,) has been so curved as to cause the contact to remain on or near the pitch circle of the pinion *Y Y*, through all the positions between those shown by the middle and the upper tooth. Contact is just commencing on the middle and ending on the upper tooth. The virtual radius of the pinion, therefore, remains practically constant, but that of the wheel is nearly two inches shorter that when the contact was on the line of centers, as will be found by prolonging *7 7* and drawing a line perpendicular to it and reaching to *W*, which line will be the virtual radius of the wheel when contact is at *7*. The reader can very closely reproduce the curve of the tooth by setting his compasses to ⅓ of *P 1*. Rest one point on *X X* and draw one side of the tooth, then reverse it and draw the other side.

Now what shall we do to improve the form of the tooth? Keeping the contact on the pitch circle of the pinion is not the correct course. It is evidently impossible to keep it on that of the wheel, and it would be no improvement if we could. There is no way except to make the contacts occur at that point on the leaf, in each position, which will cause the virtual radius of the wheel to be 5 times (or whatever the number may be) as long as that of the pinion, as it was when on the line of centers. As explained in article VI., we first draw a line perpendicular to the radius, say *3 3*, perpendicular to *P3*, and this line shows the direction of the force acting on that radius. Then draw another line perpendicular to *3 3*, and reaching to *W*. This latter line, *w W*, is the proper virtual radius of the wheel, if *P3* is the proper radius for the pinion, *i. e.*, if 3 is the proper point for contact to occur on the leaf. We know that it is not, for, on measuring, the line *w W* is not just five times as long as *P3*, as it should be. Although *w W* is the virtual radius of the wheel, it is not the *proper* virtual radius, for it is not in the correct ratio to that of the pinion.

Finding the Proper Virtual Radii of a Wheel and Pinion for any Position During Contact

Two points are here worthy of attention, first, when the tooth acts on the pinion leaf in the position *P3*, the action is oblique. But if we consider *w W* and *P3* as levers, and suppose the line *3w* to be a rigid rod or connection between them, the action becomes direct, for the force of the wheel acts at a right angle to both *P3* and *w W*.

*Fig. 38, if shown complete, would be over a foot long, from *P* to *W*. It is, of course, impossible to get the whole on the page, and I therefore only give a portion at the end which includes the pinion *P*. The reader will please remember that whenever *W* is mentioned it is really located outside of the cut, and all lines which are drawn towards *W* as a center are understood to be marked *W* and to be many times longer than they are shown. For instance, it is really five times as far from 1 to *W* as it is from 1 to *P*, although it is not shown so. An inspection of Fig. 35 will give a correct idea of the for m which these figures would have if given in full, as drawn.

* Copyrighted 1890, by Jewelers' Circular Publishing Co.

Second, It will be observed that wW and $P3$ are parallel, and $3w$ is perpendicular to both of them. If we slide the line ½ inch to the left, say to w^1 w^1, we merely take ½ inch off $P3$ and add that much on to wW. The sum of Pw^1 and Ww^1 is the same as the sum of $P3$ and wW, and the angular relations of the parts remains unchanged, for w^1 w^1 is still perpendicular to both parallel lines. We may, therefore, locate $3w$ "where it will do the most good," and the problem is to find where it should be placed to make the virtual radius of the wheel just five times as long as that of the pinion. This we may do very easily and directly by adding the length of $P3$, ($2\frac{6}{32}$ inch) and wW, ($10\frac{23}{32}$ inch) making a total length of $12\frac{29}{32}$ inches, and dividing this into six equal parts, one of which ($2\frac{5}{32}$ inches) will be the correct virtual radius for the pinion, and the remainder will be that for the wheel, in that position. Measuring $2\frac{5}{32}$ inches from P, it comes at the point marked b, which is, therefore, the place where contact should occur on the leaf when in the position $P3$. Of course, if the ratio between the pitch diameters of the wheel and the pinion was 6 to 1, we would divide the total length into 7 parts; if 8 to 1, divide it into 9 parts, and so on.

In the same way, we see that the action of the tooth on the leaf at the position $P7$ is very oblique. But, if we draw two perpendiculars as just described, which will be 7 7 and $7W$, ($7W$ is outside of the cut) and suppose 7 7 to be a rigid rod, the action at once becomes direct. And by dividing the total length of the two parallel lines into 6 parts and measuring as before, we find that contact should occur at f. To do that would require a radical change in the form of the tooth, and the point should be somewhat longer. To avoid obscuring the drawing with a great number of lines, I have only shown the perpendiculars to the different radii. The reader can readily supply the rest of the drawing by following the course just described for $P3$ with each pinion radius. It will then be found that the tooth should touch the leaf at the points marked a, b, c, d, e, f, in the several positions shown by $P2$, $P3$, $P4$, $P5$, $P6$ and $P7$, respectively, instead of on the pitch circle Y Y, as shown. Teeth so formed as to do that, will not only move the pinion at the proper speed but they will act upon it with the same force in all positions during contact, and will have as much rolling and as little rubbing contact between the tooth and leaf as it is practicable to obtain, thus avoiding friction and wear.

We, therefore, have the following rule for finding the proper virtual length for the radius of the wheel or the pinion, for any given position during contact: *Draw pitch radii representing the acting faces of the tooth and leaf in the desired position. From the extremity of the pinion radius draw a line perpendicular to it, then draw another line perpendicular to the latter and reaching from it to the center of the wheel. Take the sum of the lengths of this last line and the pinion radius and divide it in the ratio of the pitch diameters of the wheel and the pinion, and these two portions will be the proper virtual lengths of their radii. By measuring this length along the pinion radius, you find the proper point for contact with the tooth when in that position; the remaining portion is the proper virtual length of the wheel radius.* The next thing is to give the point of the tooth such a curve that it will make contact with the leaf at the points thus indicated as the proper places for contact to occur, in each position during the time this tooth is driving this leaf.

(*To be Continued.*)

CALENDAR.—Tycho Brahe, a celebrated Dutch astronomer of the 17th century, made diligent inquiries about the Gregorian calendar about to be introduced into Germany and Denmark. He acknowledged in a letter that the cause of the obstinacy to adopt it was due less to the inclination of the people to adopt a new way of counting time as concerning its author—a Catholic pope. In a book dedicated to the German Emperor Rudolph he says, however, that it is not an absolute requirement in the computation of time that it should in all respects agree with the position of the universe.

RECENT PATENTS.

The following list of patents is compiled from the records of the United States Patent Office, and especially reported to THE JEWELERS' CIRCULAR.

Issue of October 14, 1890.

DESIGN No. 20,197.—DISH OR BASKET.—HENRY BERRY, SHELTON, CONN., assignor to the Derby Silver Company, same place. Application filed Sept. 16, 1890. Serial No. 365,200. Term of patent 7 years.

DESIGN No. 20,200.—MATCH BOX.—ADOLPH THOMMEN, NEWARK, N. J., assignor of one-half to Enos Richardson & Co., same place. Application filed Sept. 11, 1890. Serial No. 364,700. Term of patent 14 years.

DESIGN No. 20,201.—BADGE, PIN, &C.—WILLIAM H. UPMEYER, MILWAUKEE, Wis. Application filed July 15, 1890. Serial No. 358,839. Term of patent 7 years.

DESIGN No. 20,202.—WATCH PENDANT.—JOHN C. DUEBER, NEWPORT, KY. Application filed September 19, 1890. Serial No. 365,564. Term of patent 14 years.

TRADE MARK No. 18,514.—WATCH MOVEMENTS.—HIPPOLYTE DIDISHEIM, New York, N. Y. Application filed September 10, 1890. Used since October 1, 1887. "The words 'THE NASSAU.'"

438,166.—DATE AND TIME STAMP. ERNST R. MALMBORG, ST. LOUIS, MO., assignor by mesne assignments, to the New York Electrical Device Company, of Virginia. Filed Dec. 26, 1889. Serial No. 334,958. (No model.)

438,314.—SYNCHRONIZER FOR CLOCKS.—ADOLPHUS GIPPERICH, RICHMOND, VA. Filed Aug. 9, 1889. Serial No. 320,250. (No model.)

438,355.—VERGE-WIRE FOR CLOCKS.—JAMES M. MILLER, VACAVILLE, CAL. Filed April 25, 1890. Serial No. 349,513. (No model.) A jointed verge-wire having a movable fulcrum and a lever for shifting the fulcrum.

438,363.—EYEGLASS-CASE.—JOHN W. SANBORN, QUINCY, MASS. FILED MAR. 14, 1890. Serial No. 343,938. (No model.) A pocket-case for the protection of eyeglasses, consisting of two leaves hinged together and adapted to close flatly without overlapping or interlocking at the periphery, one of the leaves being provided with a central skeleton projection with radiating arms and prongs over which the glass is to be placed, with a ball-and-socket-and-strap locking device on the case.

438,401.—COMBINED OPTICAL MEASURING, NOSE-CONFORMING, AND RECORDING instrument.—Daniel V. Brown, Philadelphia, Pa. Filed June 17, 1890. Serial No. 355,753. (No model.)

438,415.—WATCHMAKER'S POLISHER.—FRANKLIN HARDINGE, TORONTO, CAN. Filed Jan. 24, 1890. Serial No. 337,978. (No model.) The herein described polisher, comprising a carriage having an arm extending at right angles from the bed and provided with bearings, a spindle longitudinally and revolubly movable in bearings, a clamp hinged upon the end of the spindle, and a polisher held in the clamp.

438,416.—WATCHMAKER'S ROLLER EXTRACTOR.—FRANKLIN HARDINGE, Toronto, Canada. Filed Jan. 24, 1890. Serial No. 337,979. (No model.) In a roller extractor, a body having bearings or sleeves, bars having curved jaws and sliding longitudinally in the bearings, and a punch moving in the body between the bearings.

438,453.—RING-GAGE.—ETHELBERT WAREHAM AND WILLIAM F. DOLL, WINNIPEG, Canada. Filed July 3, 1890. Serial No. 357,672. (No model). In a ring gage, the combination of a hollow drum or thimble-like case having an opening or slot in its pheripheral portion and a graduated spring tape-like measure secured at its one end to the case and passing out at its other end through the slot in proximity to the fast end of the measure, the whole being adapted to receive the finger within the case and through the coiled portion of the measure in the same.

Issue of October 21, 1890.

DESIGN No. 20,212.—BADGE.—WILLIAM H. UPTON, CAMDEN, N. J. APPLICATION filed July 15, 1890. Serial No. 358,838. Term of patent 7 years.

DESIGN No. 20,215.—PEN-HOLDER.—EPHRAIM S. JOHNSON, JR., NEW YORK, N. Y. Application filed September 25, 1890. Serial No. 366,138. Term of patent 7 years.

438,672.—HAIR-SPRING COLLET FOR WATCHES.—WILLIAM E. BANTA, SPRINGfield, Ohio. Filed June 23, 1887. Serial No. 242,226. (No model.)

438,751.—BUTTONER.—THOMAS B. HODGE, PROVIDENCE, R. I. FILED SEPT 27, 1889. Serial No. 325,314. (No Model.)

438,767.—ELECTRO-PNEUMATIC CLOCK.—VICTOR POPP, PARIS, FRANCE, assignor to the Popp Compressed Air and Electric Power Company, Limited. Filed April 7, 1888. Serial No. 269,990. (No model.) Patented in France Nov. 11, 1887, No. 186,823; in England Nov. 18, 1887, Nos. 15,878, 15,878a, and 15,878b; in Germany Dec. 24, 1887, Nos. 44,745 and 47,546; in Belgium May 7, 1888, No. 81,725, and in Italy June 30, 1888, XLVI, 247.

438,831.—TIME-RECORDER.—HARVEY R. ADAMS, MARSEILLES, ILL. FILED March 10, 1890. Serial No. 343,258. (No model.)

438,891.—ELECTRICAL SPECULUM.—SAMUEL H. LINN, ROCHESTER, N. Y. Filed March 30, 1889. Serial No. 305,484. (No model.)

439,028.—SPECULUM-HOLDER.—JOHN N. WASHINGTON, COOK COUNTY, ILL. Filed Jan. 2, 1890. Serial No. 335,707. (No model.)

439,059.—Manufacture of Watch-Keys.—Rudolph H. Franklin, Brooklyn, N. Y., assignor to Charles C. Cummings, same place. Filed Jan. 30, 1890. Serial No. 338,692. (No model.) This improvement in the art of making spring-jaws of watch-keys and other instruments having the tapered ends and the reverse inclines above the taper ends, consists in, first, stamping out of sheet metal the flat blank having a wide flat head, with taper edges, reverse inclines above the taper edges, and a shank; second, slitting this blank along the middle from the taper end the required length for the jaws, and, third, finishing the blank.

Issue of October 28, 1890.

Trade Mark No. 18,562.—Finger-Rings.—J. B. Bowden & Co., New York, N. Y. Application filed August 30, 1890. Used since January, 1879. "The letter 'B."

439,127.—Coin-Controlled Opera-Glass Receptacle.—Samuel M. Dowst Chicago, Ill., assignor to the Automatic Machine Company, same place. Filed July 3, 1890. Serial No. 357,593. (No model.)

439,156.—Watch-Makers' Calipers.—John M. Irmen, Atlantic, Iowa. Filed March 10, 1890. Serial No. 343,427. (No model.) The combination in watch-makers' truing-calipers, of two bent levers or sections, pivotally connected together, each lever being provided with a jaw having a sharp edge formed next to its face for the purpose of poising thereon watch-wheels.

439,193.—Clock-Bell.—Aaron C. Sanford, Thomaston, Conn., assignor of two-thirds to George W. Sanford and Thomas A. Gatsel, same place. Filed April 3, 1890. Serial No. 346,417. (No model.) The combination, with a metal stand of a ring, and arms at points diametrically opposite each other connecting the post and ring, of a bell-wire having one end inserted in a hole in a side of the stand directly over one of the arms, and a pin or wedge inserted in the hole and adapted to hold the bell-wire firmly against the wall of the hole.

439,414.—Watch-Bow Fastener.—Fritz Mink, Philadelphia, Pa., assignor to the Keystone Watch Case Company, of Pennsylvania. Filed April 15, 1890. Serial No. 347,987. (No model.)

439,419.—Self-Setting Time-Piece.—Emanuel Muller, New York, N. Y Filed Dec. 7, 1889. Serial No. 332,944. (No model.)

439,432.—Spoon.—Martin L. Schoch, New Berlin, Pa. Filed May 20, 1890. Serial No. 352,453. (No model.)

439,457.—Ear-Ring.—William H. Whittemore and Gottlieb Muller, Newark, N. J. Filed Nov. 30, 1889. Serial No. 332,068. (No model.) The combination, with an article having a stem of a follower having a recess and a spiral spring located in the recess and of smaller area than the stem to bind on the same.

439,514.—Reading-Glass.—Orison Huff, Boston, assignor to Laban Heath, Revere, Mass. Filed April 2, 1890. Serial No. 346,260. (No model.)

Issue of November 4, 1890.

Design No. 20,252.—Handle for Cutlery.—Harry P. Fairchild, New York, N. Y. Application filed October 2, 1890. Serial No. 366,889. Term of patent 7 years.

Design No, 20,256.—Match-Box.—Harry P. Fairchild, New York, N. Y. Application filed October 10, 1890. Serial No. 367,731. Term of patent 3½ years.

439,629,—Watch-Balance Staff.—Sam. Botkowsky and Morris Botkowsky, Chicago, Ill. Filed Oct. 21, 1889. Serial No. 327, 745. (No model.) Balance-wheel staff composed of a longitudinal hollow body made in sections screwed together, and a removable pivot-shaft secured within the hollow body of the staff.

439,732.—Focimeter.—Patrick H. Maguire, New York, N. Y. Filed June 10, 1890. Serial No. 354,893. (No model.)

439,774.—Ring-Gauge.—Wallace Durand, Newark, N. J. Filed June 14, 1890. Serial No. 355,493. (No model.) In combination with a plate having a scale on the upper face thereof, a hand or pointer pivoted on the upper face, and fingers having on their outer opposite sides measuring-surfaces to engage the interior sides of the ring, the movement of the fingers controlling the movement of the hand or pointer.

439,838.—Electric Actuating Device for Pendulum Clocks.—John H. Dyson, Mazomanie, Wis., assignor of one-half to Herman O. Wetherell, same place. Filed June 2, 1890. Serial No. 353,988. (No model.)

439,845.—Cannon-Pinion for Watches.—William B. Learned, Boston, Mass., assignor of one-half to the E. Howard Watch and Clock Company, same place. Filed Feb. 24, 1890. Serial No. 341,417, (No model.)

439,854.—Motion-Clock.—Archibald Bannatyne, Waterbury, Conn., assignor to the Waterbury Clock Company, same place. Filed Dec. 12, 1887. Serial No. 257,578. (No model.)

439,855.—Motion-Clock.—Archibald Bannatyne, Waterbury, Conn., assignor to the Waterbury Clock Company, same place. Filed Dec. 27, 1887. Serial No. 258,976, (No model.)

439,965.—Chime for Clocks.—William Matthews, Philadelphia, Pa. Filed Jan. 10, 1890. Serial No. 336,552. (No model.) The combination, with a sounding-box, of an attuned solid bar movably supported in a vertical position by the box and held at a distance therefrom and having a muffler.

440,064.—Spectacle-Frame.—Philip J. Schreiber, Dayton, Ohio. Filed April 2, 1890. Serial No. 346,361. (No model.)

440,081.—Breastpin.—George K. Webster, North Attleborough, Mass. Filed April 4, 1890. Serial No. 346,530. (No model.) In combination with the ornamental part of a breastbin, a pin-joint having a stem, and a cup-shaped part adapted to receive the end of the pin, this cup-shaped part being non-circular in cross-section and adapted to a corresponding recess in the under face of the ornament.

Issue of Nov. 11, 1890.

Design No. 20,297.—Handle for Spoons, &c.—Samuel Thomas Adams, Mansfield, Mass,, assignor to Rogers & Brother, Waterbury, Conn. Application filed October 18, 1890. Serial No. 368,607. Term of patent 14 years.

Design No. 20,298.—Bracelet.—Henry W. Fishel, New York, N. Y. Application filed October 7, 1890. Serial No. 367,376. Term of patent 7 years.

Trade Mark No. 18,614.—Buttons and Necktie-Holders.—Howard & Son, Providence, R. I., and New York, N. Y. Application filed June 21, 1890. Used since July 1, 1887. The representation of a horseshoe extending around a picture and the words "let me give you a pointer."

440,143.—Process of Separating Gold and Platinum from other Metals in solution. Edouard Dodé, Paris, France. Filed Oct. 4, 1889. Serial No. 325,963. (Specimens.)

404,220 —Spectacle-Temple and mode of making the same.—Ferdinand Buchhop and Alfred J. Allibone, New York, N. Y., assignors to Emil B. Meyrowitz. Ridgefield, N. J. Filed Feb. 27, 1890. Serial No. 342,022. (No model.) A spectacle-temple comprising a relatively straight and stiff main portion, a flexible and resilient hook portion composed of intertwisted strands and having at the same time a substantially cylindrical and smooth exterior of a suitable diameter into which the diameter of the main portion is merged, and a terminal tip embracing the outer extremity of the hook portion and fast thereon.

440,241.—Electric Actuating Mechanism for Clocks.—Herman T. Schlegel, Akron, Ohio, assignor by direct and mesne assignments, of three-fourths to Albert A. Schlegel and Michael J. Gilbo, both of same place. Filed Sept. 6, 1889. Serial No. 323,182. (No model.)

440,258.—Manufacture of Jewelry.—Eugene A. Billault, Paris, France. Filed Sept. 17, 1889. Serial No. 324,243. (No model.) Patented in France Dec. 4, 1888, No. 194,566 and Dec. 27, 1888, No. 195,026.

440,248 and 440,249.—Coin-Controlled Opera Glass.—Thomas H. Costello, Chicago, Ill. Filed Oct. 1, 1889. Serial No. 325,712 and 325,713. (No models.)

440,308—Watch Case. James H. Fleming, Newark, N. J. Filed Aug. 3, 1889. Serial No. 319,652. (No model.) An improved watch case, combining with the center a movement-holding ring with a threaded projection engaging the center, and a bezel or cover screwed down on the center and in engagement with the projection of the movement ring, holding the latter immovable in position.

440,386—Clock Case. Archibald Bannatyne, Waterbury, Conn., Assignor to the Waterbury Clock Company, same place. Filed Feb. 7, 1890. Serial No. 339,554. (No model.)

440,392—Eye-Glasses. William Bowker, Geneva, N. Y. Filed July 12, 1890. Serial No. 358,548. (No model.)

440,441—Electric Clock. Frank Schwartz, Halifax, Canada. Filed Oct. 22, 1889. Serial No. 327,818. (No model.)

440,496—Watch Hand Remover. Paul H. Nefflen, Keyser, W. Va. Filed June 17, 1890. Serial No. 355,724. (No model.)

440,544—Watch Case. Oscar R. Decker, Rochester, Ind. Filed June 11, 1889. Serial No. 313,890. (No model.) The case center, having on opposite sides a dust arresting groove arranged around the annular wall in the inner edge of the bezel seat.

To Fasten a Mainspring.

THERE are various methods of fastening the outer end of a mainspring, any one of which may answer the purpose in certain cases, but not well in all barrels or springs. The spring fastening by means of a steel pin riveted to the spring and fitted neatly into the rim of the barrel at a certain angle, so as to be held securely but allowed to be easily removed, is the best, and perhaps the only one suited to resist the strain attending the force of a spring designed to run an English fusee watch. A hole in the outer end of the spring, receiving a pin secured to the inner rim of the barrel, is the most simple and has long been used, but is very objectionable on account of its liability to fail. For a very weak, small spring, such, for instance, as is used for a very small cylinder, such fastening may answer, but in all cases where strong springs are used, they are not reliable. The mode of fastening in American watches is preferable to all others for going barrels, and can be adapted to good advantage in the barrels of Swiss anchors with little trouble. By saving the pieces from broken springs, they can be attached easily to any spring of the proper width and strength for the watch in hand. Mainsprings should be, in our opinion, so attached at the outer end as to pull there permanently as the really practical point to the resistance. Some fasteners, contrived with the view to approach the center as the winding-up proceeds, cannot, it would seem, from any mechanical standpoint, either protect the spring from breakage or improve its motive power, and at best can only be considered as specimens of useless ingenuity.

Absolutely Free Escapement for Chronometers, Watches and Clocks.

IN THIS arrangement which is the invention of Mr. S. Riefler, an engineer of München, says the London *Horological Journal*, the balance or pendulum is entirely free from escapement friction, as will be understood from an examiation of the drawings appended. Mr. Riefler's departure is not a mere abstract idea, but a thoroughly well thought out and practicable device, for he was good enough to submit to the writer a marine chronometer and a watch that has been going for many months, both fitted with his patented device as well as the parts of a clock illustrated herewith, which has been taken from a regulator giving satisfactory results over a lengthened trial.

Fig. 1*a*.

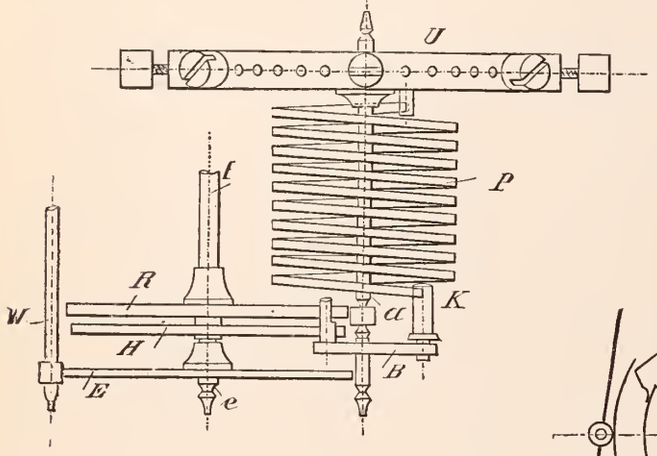


Fig. 1*b*.

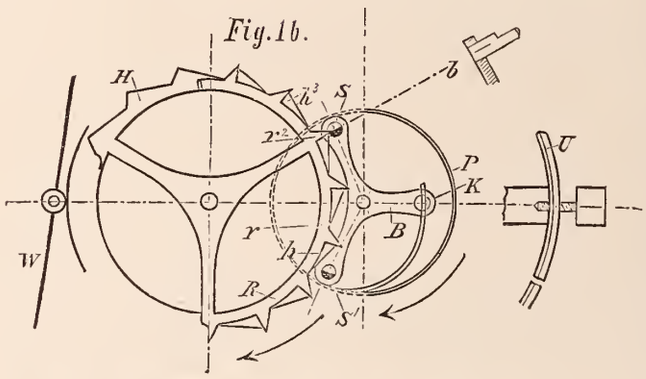


Fig. 2



Fig. 3.



Fig. 4.



Fig. 5*a*.

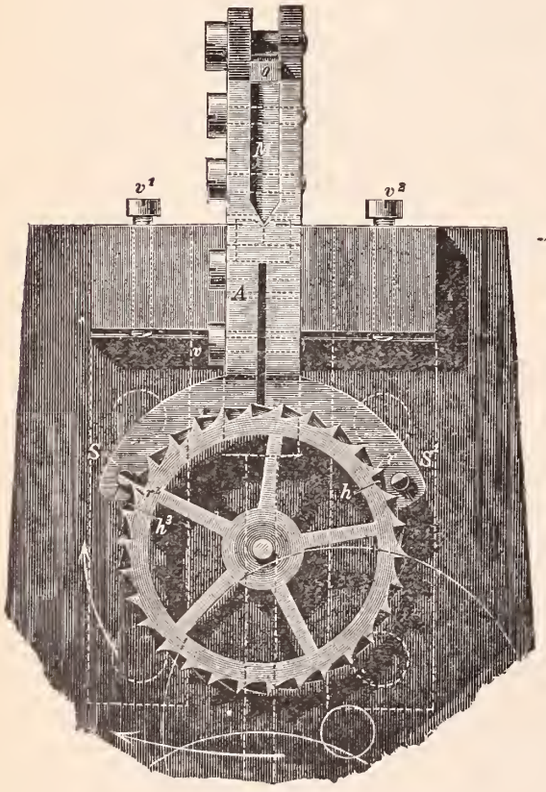


Fig. 5*b*.

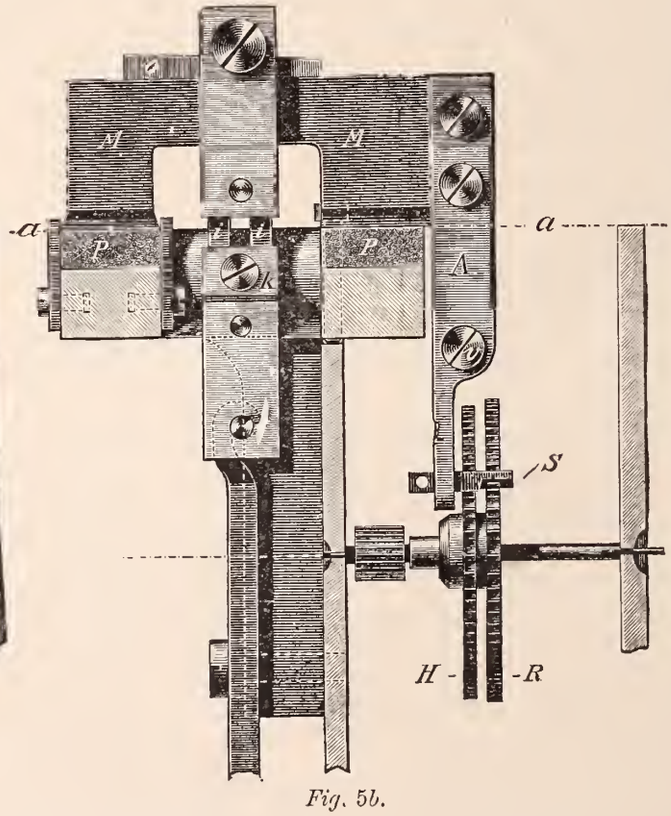


Fig. 1*a* is the elevation, and fig. 1*b* the plan of the arrangement for a chronometer or watch with a helical balance spring, though this form of spring is not at all necessary to the principle of the invention, the essential feature of which is that while one end of the balance spring *P*, is attached to the balance *U*, the other end is fixed direct to the pallets at *K*, without the intervention of lever and roller or other mechanism, so that the winding up of the spring through the short angle moved through by the pallets impels the balance—in fact, the balance is really detached. There are two escape-wheels, one above the other, the upper one *R* for locking, and the under one *E* for giving impulse. Though a double escape-wheel may be desirable where there is plenty of height, as in a marine chronometer, it is not at all necessary, and in watches only one is used. The lower pivot of the balance-staff *a* is carried in a bridge, which also serves to carry the upper pivot of the pallet staff. At *e*, the arbor on which the escape-wheel is mounted, there is a toothed wheel *E* driving a pinion on which there is a fly *W*, which has been adopted more as a precaution than from necessity.

Fig. 2 shows the section of the double-toothed escape wheel for watches when only one wheel is adopted for both the locking and impulse actions; figs. 3 and 4 the wheel tooth and pallet stone, which latter is circular for the impulse action and flatted off for the locking.

Figs. 5*a* and 5*b* show the application to a pendulum clock. Here the pallets *S* and S^1 with their anchor *A* are attached to a carriage *M* which rests on knife-edges at *PP*, and is therefore free to rock in the direction of the path of the pendulum. As the impulse is given by the escape-wheel to the pallet the carriage *M* is tilted and bends the suspension spring *i i* a little; though the movement of the spring is very slight it is quite enough to keep the pendulum going. The seats *PP* for the knife-edges are of agate, and may be adjusted through the screws v^1 and v^2. By means of the screw *U* the anchor may be opened or closed to give final adjustment to the pallets. *H* and *R* are the two escape-weeels for locking and impulse, as already described.

A prominent jeweler of Louisville, Ky., received a letter from a man in Killisnop, Alaska, inclosing twelve cents in stamps and asking the jeweler to send a box to put his watch in. He wished to send it to Louisville to have it mended. He had never been in Louisville, but had heard that city had the best watch-smith in the country. The jeweler sent the box and expects to get the watch in about four months.



[From Our Special Correspondent.]

AMONG THE DIAMOND MINES.

Pretoria, South Africa, Oct. 18, 1890.

Much depression still prevails at the Transvaal gold fields, where the evils of over-speculation, bad management, and fraudulent company flotation are being severely felt. Nevertheless, the monthly output of gold continues to steadily increase, and in this fact rests the main hope of the future prosperity of the region. The official returns shows that the output for September was 45,467 ozs., which is 2,600 ozs. more than in the preceding month and is the largest yield on record from these fields. At Johannsburg, the principal centre, there is a condition of thorough stagnation in existence. The share market is moribund, trade is paralyzed, and a great number of persons are unemployed. It speaks much for the commercial morality of the erstwhile Golden City, however, that there have been no fires or insolvencies of any magnitude and but little increase of crime.

The collapse of the Cape of Good Hope Bank a fortnight ago has given South Africa a blow from which it will not recover for a very long time to come. For a time business in Kimberley was completely demoralized, though the financial centres and share markets in other parts of the country have now recovered from the state of utter panic into which they fell. When the announcement was first made stocks were sacrificed by frightened holders at any prices obtainable, though in some cases a lack of buyers saved them from themselves. Confidence was not restored until people had made sure that the Natal Bank was not going to follow in the footsteps of its ill fated neighbor. The main cause of the smash has been the reckless advances made by the bank on gold script.

Despite every precaution on the part of the detective department, which is an elaborate and expensive organization, the crime of I. D. B. continues to flourish. The illicit trade must either be so profitable or so fascinating that the heavy punishment upon conviction does not seem to deter others from risking almost everything in it. A large proportion of those caught red-handed are foreign Jews, though persons of every European nationality are undergoing imprisonment for the crime.

A new "diamond mine," in which 1,000 claims have been marked out, has been discovered six miles from the Vaal river, between Hebron and Wittefontein. Three hundred of the claims have been applied for, and it is reported that some valuable gems have been found. We have heard much of this sort of thing before, although the opinion prevails amongst experts that there are more diamonds in the country than have ever been worn.

The old Kimberley mine has now a very weird-like appearance. It is a great gaping pit, and where once thousands of living men swarmed, busily digging all day long, wild bushes and weeds now grow. It is suggestive of nothing but desolation. No one ever ventures down its steep and rugged sides. Boys find amusement in throwing stones and watching them bounding from ledge to ledge. Such is the outward aspect of the Kimberley mine to-day. In the underground workings the activity is like unto that of a hive of bees.

Debris washing has now become a small industry on the diamond fields, already furnishing employment to over three hundred Europeans and about one thousand natives. The De Beers mines are letting out ground, but limit the number of permits to one hundred. The quality of this hitherto quasi-useless rubbish is proving rich, and it is not unusual for one European, with his gang of natives, to find diamonds in one day realizing £50. Local trade has benefitted by this new system.

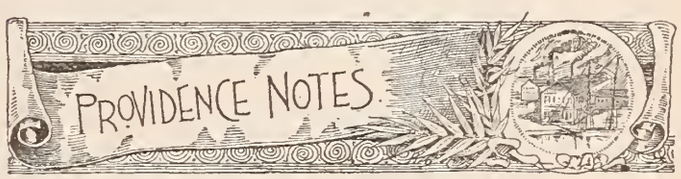
Some promising finds have been made at the newly-opened diamond mine at Kroonstad, in the Free State. Altogether, 190 gems of small size but good quality has been unearthed since the work commenced about three months ago. The existence of stones of considerable dimensions is apparent from the fact that one or two splints have been unearthed, which must have come off diamonds of extra size. The blue is hard and similar to that at De Beers.

The diamond export for September was 220,110 karats, valued at £350,000, or about 32s. per karat. This export is at the rate of about four and a quarter millions per year. Seeing that very little is doing at the Dutoitspan and Bultfontein mines, it shows that the value is about the same, while the output is considerably less than before amalgamation took place to any extent on the fields. The export from Jagersfontein was 13,467 karats, valued at £30.900.

Some of the men engaged at the river diggings have done well during the month, finding stones of 20 karats and less of good quality.

The other day a splendid blue-white stone of exquisite shape, weighing 3¾ karats, was found at Koffyfontein, one of the new mines a little outside of Kimberley. So far as color is concerned, the stone is one of the finest ever found in South Africa; £90 was refused for it.

The public health both on the diamond and gold fields is now good, and the mortality is only a trifle greater than in the mining districts of Europe and America.



[From our Special Correspondent.

Providence, Nov. 20, 1890.

Another month has passed and business still continues in an encouraging condition. All of the manufactories, with but very few exceptions, are working full time, and in many instances are running until 9 and 9.30 o'clock five evenings in the week, and have been for several weeks past. It is an undisputed fact that the jewelry business this fall has been the best manufacturers have experienced in nearly a decade, and at the present time there do not appear to be any signs of abatement. It is estimated upon good authority that the jewelry production in this city is fully 20 per cent. larger than any year since the Centennial, and that the output this fall will be upwards of 33⅓ per cent. in excess of that for any fall trade during the same period.

One interested in jewelry and remembering the designs of ten or fifteen years ago, could hardly help being pleased with the wonderful artistic improvements of the past few years. This season the enamel flower jewelry, which had its inception about three years ago and has hung tremblingly on the brink of failure until now, has reached the height of success and attracts attention for perfection of design and natural coloring. Violets, wild roses, daisies, pansies and the latest fashion in flowers, the orchids, mounted as lace pins, ear rings and necklaces, are very tempting and particularly suitable for full dress. In gold jewelry the designs are very artistic. Necklaces are quite the rage now, from the costly diamond down to a string of simple silver beads. Enamel flower necklaces with a small stone in each flower are inexpensive and in very good taste. Gold necklaces consisting of a row of pendant ornaments or of fancy twisted gold

wires, are very handsome. Gold beads are still in vogue and are worn as necklaces with from one to seven strands.

It wasn't very long ago that appearances seemed to indicate a subjugation of that inborn survival of savagery in woman which finds expression in ear jewelry. But it was simply a passing dictum of fashion. Now the same despot of the sex decrees that ear rings must again be worn. That is why so many of the fair sex have re-asserted their devotion to personal adornment, which has governed them since the days of Sarpeia, by again fastening precious stones and bits of curiously wrought gold and silver to the lobes of their ears. The jewelers have made every exertion to suit the ideas even of the most fastidious, by placing in the market small and dainty drops and rings of exquisite workmanship.

The screw ear ring is the most fashionable perhaps. It screws into the hole in the lobe, and can be worn during sleeping hours Tiny pearls, singly and with a diamond and ruby on each side are greatly fancied by young girls, according to the statement of a prominent jeweler of this city a few days ago. A great many of these are manufactured in Providence. The ear rings which are shipped from this city in largest quantities, however, are the small twisted gold ones. These are comparatively inexpensive. Enamelled ear rings, representing violets and pansies, are pretty for color. The varieties are innumerable almost, and the young lady who approaches the case of ear rings must find bewilderment in the array of beautiful trifles. Diamond hoops are very fashionable, but there are not many sold here as they are too expensive. Not many pendants are sold at present.

The sheen of Attleboro jewelry, which is recognized in all parts of the globe, has caught the eye of English capitalists who are anxious to furnish capital for the combination of all the firms at North Attleboro manufacturing lace pins and other goods for ladies' wear. Elton I Franklin, of the firm of E. I. Franklin & Co., is the recipient of a letter written at the dictation of Englishmen, by a United States agent, asking for information regarding a combination as named. To carry out this plan and join the firms of Franklin & Co., S. E. Fisher & Co. at North Attleboro, and Wade, Davis & Co, Plainville Stock Co. and Lincoln, Bacon & Co. at Plainville, will call for capital amounting to a sum between $750,000 and $1,000,000. It is understood that the business would not be taken from that section, but controlled by the English syndicate. The object of the promoters of the new scheme would be to reduce expenses as much as possible, and push the business for large sales and big returns. What the jewelers think of the proposition is not learned, but as the project has been kept very quiet the matter has not been fully discussed by the parties interested. All the firms named are old, established houses, and have enjoyed the best of trade for many years.

At Attleboro there is some important change on foot in at least one large concern, but whether it is in any way connected with the English project has not been made public.

Not only at Attleboro have agents of English syndicates been endeavoring to gain control of certain manufacturing plants, but this city has attracted the attention of foreign capitalists, and recently the citizens were treated to a sensation by the reported securing of an option on the new and extensive works of the Gorham Manufacturing Co. at Elmwood. This information aroused much interest in the community, and, notwithstanding the denial of interested parties that any change is contemplated, there is not the least doubt that offers have been made, and even as late as the middle of this month the deal was still under consideration.

But speaking of syndicates and changes at once suggests the tariff bill and politics, and is a gentle reminder that the result of the election of Tuesday, November 4, was one of surprises for everyone in this little State, which, for the first time since 1863, has elected a Democratic Representative to Congress.

What relation politics, the tariff and the Republican overthrow throughout the country may have upon monetary matters is immaterial at this time. Suffice it to say, however, that November has been a squally month, financially speaking, for the jewelers and it is the opinion of prominent manufacturers that the new year will reveal a condition of affairs unequalled since the disastrous panic of 1873. Early in the month came the news of the assignment of Dorrance & Krugler, of New York, manufacturers in this city being interested in the sum of about $2,500. Later the trade was informed that S. H. Pelton & Co, wholesalers of Denver, Col., had gone under, and that by this failure the manufacturers in this city would suffer to the extent of between $8,000 and $10,000. The financial standing of the firm had been regarded as shaky for some months, and about a fortnight ago the firm was attached for $78,000, and during the week following other attachments were put on, making in the aggregate over $150,000 in attachments. Just what the assets would be was only a matter of conjecture, but when the big safe of the firm was opened a few days later, the suspicions of the creditors were found to have been well grounded. It was empty; all of the books, papers and vouchers of the firm had disappeared. By the failures the members of the Manufacturing Jewelers' Board of Trade of this city lose between $4,000 and $5,000.

The last failure in which Providence houses are creditors was that of the Warner Manufacturing Company of Minneapolis, which now asks for an extension, with a compromise of 33⅓ per cent. The indebtedness here is not large, amounting to only about $2,500.

The first and final settlement of the affairs of A. R. Brattin, of Kansas City, has been made by the assignee, and the creditors will realize 16¾ per cent. Manufacturing jewelers in this city were interested in this failure to the extent of a few thousand dollars.

The trade hereabouts were somewhat astonished early in the month by the published statement that the S. Albro Company, manufacturers of rolled plate chains, at 80 Clifford street, this city, had given a chattel mortgage for $12,000 to John Austin, the refiner. To many this had the appearance of a foreshadowing of coming failure, but when the facts are known in their true light the aspect is changed, and it represents the fruits of a successful business. At the time of the dissolution of partnership between Stephen Albro and Sylvester K. Merrill on January 26, 1887, John Austin furnished Mr. Albro $30,000 with which to purchase Mr. Merrill's interest in the business Since then Mr. Albro has paid Mr. Austin, with interest at 10 per cent., all of this loan excepting about $12,000, and on February 23, 1889, drew up a mortgage deed on all machinery, stock, tools, etc., in the shop at 80 Clifford street. This deed, which, by the way, was not recorded until October 30, 1890, provided for the payment of the balance ($12,000) in twelve promissory notes of $1,000 each, bearing interest at 10 per cent. per annum, payable weekly, said notes falling due every six months. So it will be seen that instead of foreboding ruin it indicates a firmer financial basis.

During the month the usual number of changes in firm names, places of business, etc., have been noted as follows:

W. S. Godfrey & Co., 183 Eddy street, are out of business.

W. T. Sherman & Co. have moved into new quarters at 195 Eddy street.

The Keystone Jewelry and Novelty Company, 33 Page street are out of business, their plant having been sold at auction Nov. 14.

W. H. Howe succeeds D. A. Needham at Woonsocket, R. I.

F. A. Stevens, has removed from Attleboro to 33 Page street, this city.

Dover & Pritchard have commenced the manufacture of jewelers' findings at 227 Eddy street, Both these gentlemen are experienced jewelers, Mr. Dover having formerly been with John T. Mauran & Co. and Mr. Pritchard with Thomas Lind.

Fowler & Claflin, 178 Eddy, street, have dissolved, James A. Fowler withdrawing and William S. Claflin continuing.

Dewsnap & Leonard, 195 Eddy street, are out of business.

The Charles R. Smith Plating Company have moved into the shop 21 Eddy street.

FOWLER'S ENGLISH CRAPE STONE JEWELRY.

WE DENY IN TOTO

The rumors that have been circulated to the effect that upon the retirement of our Mr. Charles A. Fowler, in January next, our goods will be handled exclusively by a New York House. These rumors have no foundation whatsoever.

For the benefit of the Trade we herewith announce that our goods will continue to be sold to the legitimate JOBBING JEWELRY TRADE without any distinction or favor.

183 EDDY STREET, PROVIDENCE, R. I.
198 BROADWAY, NEW YORK.

NOVEMBER 20, 1890.

FOWLER BROS.

J. F. FRADLEY & CO.

Gold and Silversmiths.

WE HAVE ADDED A FULL LINE OF

Repoussee Sterling Silver Ware

IN CONNECTION WITH OUR

Regular Line of Gold Headed Canes, Gold Match Boxes, Umbrellas & Novelties,

23 John Street, New York.

WILLIAM B. DURGIN,

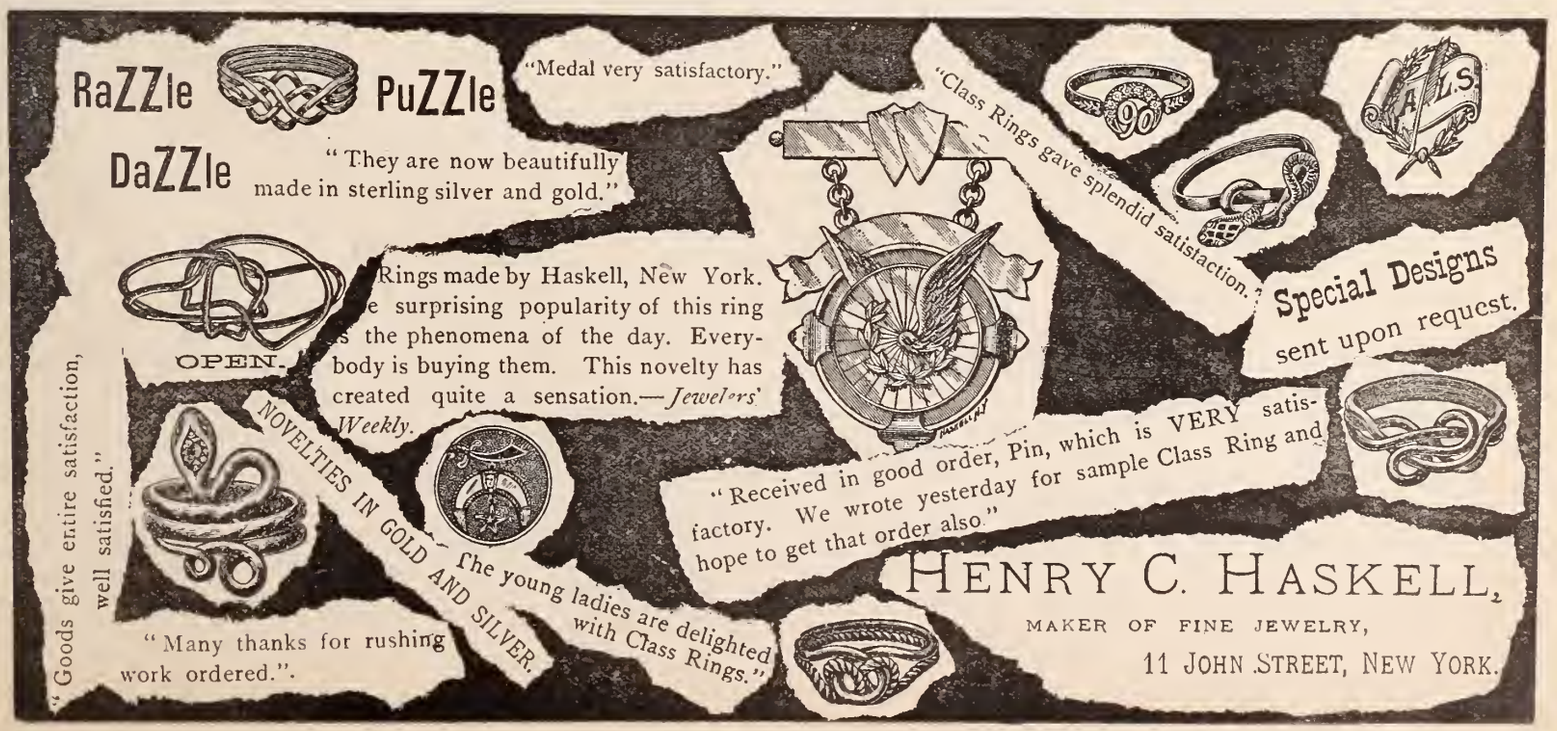
Designer and Maker of Wares in

Sterling · Silver,

SPECIALTY OF

Plain and Fancy Flatware,

CONCORD, N. H.



Simmes & Co. have removed from 119 Orange street this city to the Robinson Building, Attleboro.

Cole & Taylor succeed A. Meyers in the manufacture of jewelers' findings at 14, Page street.

Ellis, Livsey & Co. is the name of a new firm at Attleboro.

Thomas W. Lind has removed from 35 Potter street to 67 Friendship street, corner of Eddy.

Not only have there been changes among firms, but the coming season will introduce several of the salesmen on the market as representatives for new employers. Among these are:

W. F. Chambers, who will look after the New York office of Fred. I. Marcy & Co.

Fred. Schmidt has resigned his position with H. H. Curtis & Co., of Attleboro.

R. G. Schutz has severed his connection with the Providence Stock Company, and is now carrying the "grip" for Hamilton & Hamilton, Jr.

W. T. Cheevers, formerly with Sandland, Capron & Co., of Attleboro, is now with G. W. Cheever & Co.

One of the novelties of which the trade in this city can boast is that of a young lady drummer who shoulders her "grip" with the best of them, and allows none of the boys to get ahead of her. This is Miss Florence Richardson, representative for Henry Read. Miss Richardson is a handsome young lady of some twenty summers, and comes of a family who have for several generations been identified with the jewelry business. Her father, Charles H. Richardson, has for years been in the employ of William C. Greene & Co.; her grandfather, Charles Richardson, was a manufacturer way back in the thirties; her great uncle, Henry Richardson, was an old time manufacturer, and the late Thomas Richardson was a member of the old firm of Richardson & Hicks, and her cousin, Albert Richardson, was for several seasons salesman for E. B. Ingraham, of this city.

The death of Mr. Cyrus C. Hicks brings to mind accidents which have happened during the past twenty years, in which gentlemen connected with the jewelry business of Providence and Attleboro have been sufferers.

It is somewhat remarkable, when it is considered that there are on an average upwards of 225 to 300 representatives of the trade in this vicinity who are continually on the road travelling back and forth and the numerous risks which are run, that the percentage of accidents is so slight; in fact, since 1870 there have been, including Mr. Hicks, only five manufacturing jewelers or salesmen who have lost their lives through accidents while traveling. FAIRFAX.

Lacquer for Polished Copper Plates.

Salt Lake City, Utah, Oct. 1, 1890.

Please give a recipe in your next issue of THE CIRCULAR for making lacquer to prevent polished copper plate from tarnishing. W. H. DUTTON.

Presumably correspondent wishes to retain the bright copper color of the plate. In this case, simply coat the article with collodion, which will protect it against the influence of noxious gases.

If he prefers a lacquer, the following are a few favorite recipes:

Deep Gold Lacquer.—Alcohol, ½ pint; dragon's blood, 1 drachm; seed lac, 1½ oz.; turmeric, ¼ oz. Shake up well for a week at intervals of, say, a couple of hours; then allow to settle and decant the clear lacquer, and if at all dirty filter through a tuft of cotton. This lacquer may be diluted wilh a simple solution of shellac in alcohol, and will then give a paler tint.

Bright Gold Lacquer.—1. Turmeric, 1 oz.; saffron, ¼ oz.; Spanish annatto, ¼ oz.; alcohol, 1 pint. Digest at a gentle heat for several days; strain through coarse linen, put the tincture in a bottle add 3 ozs. good seed lac coarsely powdered. Let it stand for several days, shaking occasionally. Allow to settle and use the clear liquid.

2. Take 1 oz. annatto and 8 ozs. alcohol. Mix in a bottle by themselves. Also mix separately 1 oz. gamboge and 8 ozs. alcohol. With these mixtures color seed lac varnish to suit yourself. If it is too red, add gamboge; if too yellow, add annatto; if the color be too deep, add spirits. In this manner you may color brass of any desired tint.

Pale Gold Lacquer.—Best pale shellac (picked pieces) 8 ozs.; sandarac, 2 ozs.; turmeric, 8 ozs.; annatto, 2 ozs.; dragon's blood, ¼ oz.; alcohol, 1 gallon. Mix, shake frequently till the gums are dissolved and the color extracted from the coloring matters, and then allow to settle.

Dangers of the Nickel-in-the-Slot Opera Glasses.

DR. F. OGDEN STOUT said in the course of a conversation at the office of the Spencer Optical Manufacturing Company a few days ago: "The introduction of the drop-a-dime-in-the-slot opera glasses into the theaters has probably done more to injure the eyes of the users than any one thing. These opera glasses generally are worth about $18 per dozen; and for inferiority in finish and quality of lenses they cannot be surpassed. This, however, is of not so much importance to the public as the injurious and dangerous diseases that may be taken from one user to the other. It is an acknowledged fact that a number of eye diseases may be contracted by bringing the eye in contact with towels, handkerchiefs, or any thing the afflicted may have used around the eyes. What, then, would be the effect, if to-night a person with such a disease uses one of these opera glasses, and a particle of the secretion adheres to the eye-piece, and to-morrow night it comes in contact with a healthy eye? Could not the infectious particle come in contact with a healthy eye as easily as it could be left by an unhealthy one? It is useless for me to answer these questions. In New York City children with eye diseases are prohibited from entering the baths for fear that the water will be contaminated and the diseases thereby conveyed to others; and although precautions are taken scarcely a season passes without an epidemic among the great unwashed. But very few have heard of diseases caused by the use of the opera glass in the theaters. Why is this so? Because those becoming afflicted do not have a thought that an opera glass they have used is the cause. A physician will ask them if they have used towels or other articles that have been used by others with sore eyes, but he does not ask them about the use of an opera glass, and therefore the source of disease in a large number of cases is unaccounted for."

"One of the most serious of eye diseases that may be transmitted by a contagion is what is called by the medical profession mucopurulent conjunctivitis or catarrhal ophthalmia, a contagious inflammation of the conjunctiva or the thin membrane which covers the outer part of the eyeball and the inner side of the lids; it may be transmitted to a healthy eye by using any article that has been brought in contact with an eye so diseased. Prof. Noyes in his admirable work on the eye says in speaking of its cause:" In a few instances it seems to be of spontaneous origin, but these are very rare. While in the vast majority of cases some source of contagion can be traced by communication from a similiarly diseased eye by indirect contact through the fingers or handkerchiefs, towels, clothing or rags A very minute quantity is sufficient. To show how contagious it is he says, the mystery which sometimes attaches to the transmission of the inflammation to a healthy eye is less surprising, when it is known that the pus when diluted 1 to 1,000, still retains decided contagious properties." Drs. Fox and Gould in their "compend" on the eye say, "The chief cause is doubtless contagion. Caution about the use of towels, etc., must always be urged upon parents and those afflicted." Trachoma or granulated lids is also an infectious disease of the eyes. Drs. Fox and Gould say in their book on the eye that "mal-nutrition, fatigue, bad ventilation, etc., may produce the affection spontaneously, but the greater number of cases arise from infection. I might go on and describe a number of diseases of the eye that are contagious, but it is unnecessary as I have cited enough to illustrate, and those desiring a more thorough knowledge of this can be gratified by turning to any standard treatise for the diseases of the eye."

OUR TRADE ORGANIZATIONS

THE JEWELERS' LEAGUE..

THERE were presentat the regular monthly meeting of the Executive Committee, held on Friday, Nov. 7, President Hayes, Vice-President Greason and Messrs. Howe, Bardel, Jenks, Jeannot, Untermeyer and Sexton.

There being no deaths and no assessment was ordered. Seven requests for change of beneficiary were granted, one application for membership was referred, three applications rejected and the following applicants were accepted to membership : O. T. C. Colonius, St. Louis, Mo., recommended by A. Kurtzeborn ; Henry Hicks, Philadelphia. Pa., recommended by Wm. F. Harper ; Louis Hinsman, St. Louis, Mo., recommended by A. Kurtzeborn ; O. H. Hull, Chicago, Ill.. recommended by G. J. Corey and W. Ellbogen; R. G. M. Krom, New Orleans, La., recommended by Wm. Bardel and W. Barker Snow ; Geo. J. Lewis, St. Louis, Mo , recommended by M. Bauman; Chas. H. Longstreth, St Louis, Mo., recommended by S. T. Johnston ; Arthur W. Moore, Newark, N. J., recommended by Henry Hayes and Geo. R. Howe ; Jacob Muhr, Philadelphia, Pa., recommended by D. F. Conover and H. Schimpff ; Richard R. Pinkstone, Philadelphia, Pa., recommended by Simon Muhr and H. Schimpff; A. Alling Reeves, New York City, recommended by Henry Hayes and Eugene Unger; H. C. Whittier, Providence, R. I., recommended by John McCready.

JEWELERS' SECURITY ALLIANCE.

THE regular monthly meeting of the Executive Committee was held at the Alliance office on Nov. 14. There were present Vice-Presidents A. K. Sloan, Henry Hayes and David Untermeyer, J. B. Bowden, Chairman, Chas. G. Lewis, Treasurer, Messrs. White, Kroeber, Butts and Geo. H. Hodenpyl, Secretary.

The following firms were admitted to membership: Wm. Morris & Co., 702 Chestnut street, Philadelphia, Pa.; Malcolm Bridgman, 173 Main street, Northampton, Mass.; Wilson W. Berry, 303 Spruce street, Scranton, Pa.; A. D. Foucart, 325 Pine street, Williamsport, Pa.; James E. Carpenter, Centre street, Southington, Conn.; Chas. S. Raymond, cor. Douglas and 15th streets, Omaha, Neb.; Boyne & Badger, 4 South Tryon street, Charlotte, N. C,; Wm. Day, 57 East Main street, Lexington, Ky.; Frank Hoffa, 409 7th street N. W., Washington, D. C.; George S. Moorhead, The Neck, Brownsville, Pa.; C. F. Hopkins, 209 Main street, Gloucester, Mass.; J. D. Jensen & Co., 228 Main street, Henderson, Ky.; Abraham L. Saltzstein, Jr., 505 7th street N. W., Washington, D. C.; James C. Badger, 104 North Main street, Concord, N. H.; Baring J. Bear, 1,521 East Main street, Richmond, Va.; Campbell Bros., Edward street, Henry, Ill.; Wm. M. Frank, 461 Pennsylvania avenue, Washington, D. C.

THE JEWELERS' AND TRADESMENS' COMPANY.

AT THE several recent sessions of the executive committee, the following candidates were admitted to membership :—Arthur W. Austin, Norwalk, Conn ; Victor S. Merritt, of Merritt & Small, East Hampton, Mass., and in New York City, William Foster and Cornelius Savage, with the Gorham Manufacturing Co., William F. Meeks, of William F. Meeks & Co., Nathan Rogers, Samuel E. Ayres, John R. Westervelt and Benjamin Blacklidge, with United States Express Co., Conduce S. Megrue, with Aikin, Lambert & Co. Lathrop Pope, Treasurer United States Purchasing Co., and Samuel A. Meeks, cashier, Spencer, Trask & Co.

The recent death of Gustave M. Lippmann, formerly with Pforzheimer, Keller & Co., was paid out of the surplus mortuary funds without the necessity of assessing for it, and notices of the fact have been mailed to each member.

For the greater convenience of the members the board of directors have directed that upon January 1st, next, the annual dues, instead of being paid annually in one sum, shall hereafter be divided into quarterly payments. Another novel feature is that hereafter mortuary assessments will not be required in advance from incoming members ; The initial expense will thus be materially lessened, while the Association will be strengthened by the accession of new members in consequence, the old and new members being on the same footing.

NEW YORK JEWELERS' BOARD OF TRADE.

THE banquet of the New York Jewelers' Board of Trade will be held at Delmonico's on the evening of Wednesday, Jan. 21. The arrangements are under the charge of a committee composed of M. D. Rothschild, John C. Downing, David Keller, George E. Fahys, Horace D. Sherrill, S. F. Myers, and E. J. Scofield, ex-officio.

Veit Hirsch & Co. and Henry Goll & Co., New York, have applied for membership. Members now admitted are free of dues until the quarter commencing Jan. 15, 1891. They have full privileges. There is no initiation fee required, and the dues are $75 per annum. A cordial invitation is held out to non-members of the Board to send in half a dozen trade inquiries and the same number of claims, to test the efficiency of the organization.

Henry Froelich & Co , Leon Hirsch, and Hipp Didisheim have been admitted in the New York Jewelers' Board of Trade. The membership now numbers about 130 firms.

NOTES.

The regular monthly meeting of the Retail Jewelers' Association of Missouri, was held on Nov. 2d, at St. Louis. Five new applicants for membership were elected : W. B. Lauman, St. Louis ; W. B. Simpson, Holden, Mo.; J. Koetting, St. Genevieve, Mo ; F. Jacoby, O'Fallon, Mo.; and H. E. Johnson, Popular Bluff, Mo. The next meeting will be held on Sunday, Dec. 7.

The Jewelers' Building and Loan Association recently held a sale of money, E. R. Crippen, with the Brooklyn Watch Case Company, borrowing $4,000, with which he intends to erect a residence in Orange, N. J., and Elias Wolf, with S. F. Myers & Co., who borrowed $6,500 to purchase a house in Brooklyn, N. Y. The Association is progressing prosperously, and now have about 200 members. The next sale of money will take place on Dec. 8.

The Boston Jewelers' Club dined at Young's Hotel on the evening of November 15th, with about twenty members present. Chas. Harwood presided, and the guests were Messrs. N. Ripley, J. L. Shepard and E. H. Harden.

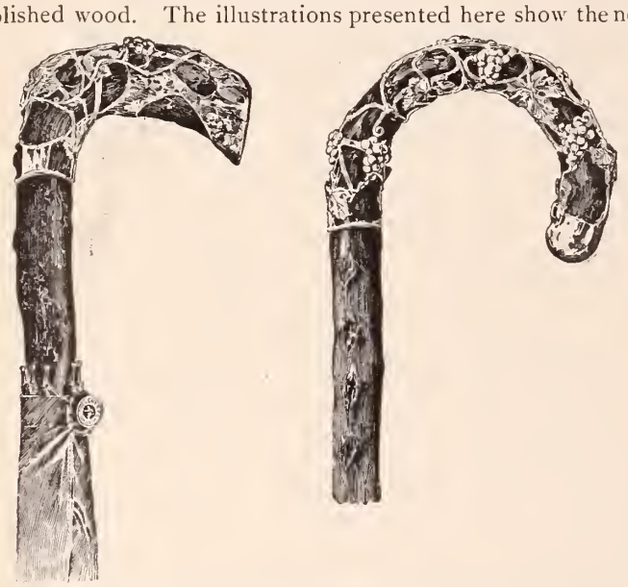
Canes and Umbrellas.

THEY MUST BE MODEST AND THE ORNAMENTATION GENUINE.

THE manufacturers of canes and umbrellas have exerted themselves this season to create a desire for expensive mountings, and a person with a taste for the rich or showy has a large assortment to choose from. The more expensive the article the more profitable it is to the jeweler, of course, and this desire for large profits is the sole reason for the elegant specimens of canes and umbrella handles that are now in the market. A person can equip himself with a cane that will be conspicuous in an alley at midnight, or he can spend nearly as much money and get a stick that will be remarkable to the unobservant only for its modesty.

A year ago there was a craze for massive canes with big knobs for heads. This craze gradually extended to the umbrella, and grew so alarming that a man in possession of either one of these articles had about all he could take care of. A large manufacturer interviewed thinks the correct thing in an umbrella was a plain handle of natural wood, and that no other ornamentation than a high polish and a little solid silver would be carried by persons who knew what was proper. A man could stray a short distance into the paths of fancy, he said, regarding canes, but conspicuous mountings even on canes would scarcely be tolerated by men who know what it is to be well dressed. Other dealers agree with him, but in spite of this conviction they are all prepared to accommodate those who are willing to risk criticism in this way. But even these persons will have to keep within certain limits, for little provision has been made to please those who have a taste for grotesque and massive mountings.

The new designs for decorating umbrella handles consist chiefly of intricate webs or vines of gold or silver wrought about a handle of polished wood. The illustrations presented here show the newest



designs and speak plainer than words of the change in style. The first three represent this net-work ornamentation. All shapes of sticks are used, but English oak is the favorite, because its soft brown tint and corrugated surface make a beautiful contrast with the veins of silver and gold. Ranking next to the English oak is hazel, which is also largely used. Occasionally, in place of this net-work shown in the illustrations, irregular pieces of silver are deposited over the surface of the handle. When value alone is thought of this latter method of ornamentation is largely affected, for the patches of metal can be as heavy as desired and as plentiful, for they can run six or eight inches down the handle. This is by far the cleaner system, for the action of the hands keeps the metal bright, and there are no crevices in which dust can settle.

The two illustrations here presented show the lengths which it is permissible to stray this fall in the matter of noticeable patterns. Neither one of them is strictly new in shape, but the idea of ornamenting them came with the present necessity for a retiring style. The loop handle is a solid piece of natural wood, but an attempt is made to deceive the eye by clasping it at the end with a ring of gold or silver. Where the point meets the body of the handle it is caught again by another ring. The knob that projects back of the loop is



mounted with an oval piece of silver or gold, which completes the ornamentation. The other cut displays a handle of rugged English oak. This shows the new effects in applique or deposit silver work. The ornaments are of detached silver patches, scattered over the rough surface of the knob. One is the raised figure of an anchor, while the others are etched and ozidized in pretty conventional figures.

"The fashionable trade this year," said a manufacturer, "demand the natural stick with just a little silver on it. Everything this year must be genuine. It doesn't make so much difference what kind of a stick you have so long as it is just what it appears to be. Last year there were a lot of silver-headed umbrellas and canes sold that were not silver headed. This had an injurious effect. Be genuine and modest in the matter of canes and umbrellas, and you will be in style."

We are indebted for cuts and much information to the Alvin Mfg Co., Newark, N. J.

Diamonds in Australia.

IN A PAPER recently issued by the Government Statistican of South Wales it is stated that many descriptions of gems and gemstones have been discovered in various parts of the Australasian Colonies, but no systematic search has been made for any but the diamond. Diamonds are found in New South Wales and Victoria, and Queensland, but only in the parent colony have any attempts been made to work the diamond drifts. The principal diamond fields are situated at Bingera, in the New England district. The Government of New South Wales has, on various occasions, obtained the services of experts to report upon the fields, as well as the gems which have been from time to time extracted from them, and these reports, it is said, have generally been of an encouraging nature. The number of diamonds found in the Colony to the end of 1887 is estimated at 75,000, the largest one being of $5\frac{5}{8}$ carats, or 16.2 grains. The diamonds occur in old tertiary river drifts, and in the more recent drifts derived from them. The deposits are extensive, and have not yet been thoroughly prospected. The New South Wales diamonds are harder and much whiter than the South African diamonds, and are classified on a par with the best Brizilian gems. During the year 1887 the diamond companies at Cope's Creek, near Bingera, produced about 23,000 diamonds, weighing 5,151 carats; but in 1888, owing to the severe drought which occurred, the search for diamonds had to be temporarily abandoned.

TRADE GOSSIP.

—Bene, Lindenberg & Co., 171 Race street; Cincinnati, O., are out with an elegant line of holiday novelties, diamonds and watches.

—F. A. Stevens & Co. on November 20 moved from Attleboro, Mass., to 33 Page street, Providence, R. I., where better manufacturing facilities have been obtained.

—On November 1 Hearn & Braitsch, manufacturers of fine walking sticks, Providence, R. I., moved into their new factory at the corner of Potters avenue and Melrose street. A full description of this factory appeared in a recent issue of the CIRCULAR.

—The Phœnix Glass Co. exhibit at their store, 729 Broadway, New York, new and original shapes of great beauty in wine-glasses, flagons, tazzas, and various table dishes. The glass has a brilliant transparency, and the skilled cutting gives full effect to the dancing, prismatic hues.

—L. Sauter & Co., 1 Maiden Lane, New York, manufacturers of diamond jewelry, fine rings, scarf pins, &c, keep up their reputation for furnishing the newest and most artistic styles in rich jewelry, which have the desirable quality of being salable and reliable. There are no complaints of dull times with this firm.

—Max H. Kling, Corbin Building, corner John street and Broadway, New York, who is always alive to the interests of his customers, has made up a collection of fine diamond jewelry, which combines good selling qualities, originality of style and perfection in workmanship. Mr. Kling is a good connoisseur of precious stones, and his judgment may be relied upon in selecting and mounting them.

—Bates & Bacon, the filled case manufacturers, have been very successful with their "Peer" and "Favorite" cases, fitting the new O size Elgin movements. No difficulty has been experienced whatever in casing these movements with the "B. & B." cases, while considerable difficulty has been found with other makes. New designs in all the popular styles, "Peer," "Gem," "Favorite" and "B. & B." have been added this season.

—Col. J. M. Rutherford, "the jewelers' auctioneer," 618 Chestnut street, Philadelphia, has just completed a very successful sale for D. F. Grove, Lancaster, Pa., making his twelfth sale in that city. On Nov. 24 he opened in Pittsburgh for M. G. Cohen, where he will be until January 1, 1890. The Colonel is in great demand at present, his services being required in various sections of the country. If he is not quite omnipresent he comes as near to it as an active, energetic auctioneer can in this vale of mortal limitations.

—All jewelers do watch repair work, and all need a book of record of some sort to keep track of the jobs. A useful book is prepared especially for this purpose by W. B. Dickie, stationer, of 67 William street, New York. It costs but little more than a plain book, and is tabulated to meet the wants of the repairer in every particular. It is made in three thicknesses, one of 100 pages, another of 200 pages and a third of 350 pages. Encouraged by the success he has met with in the sale of this little convenience, Mr. Dickie has also devised a watch stock book on the same plan, and affording a complete and accurate record of every watch, both of purchases and sales.

—Hayes, Myer & Co. have copyrighted their files, and they will hereafter be known as "Gold Medal Files." They have adopted this name as a trade mark from the fact that the Franklin Institute of Philadelphia, last February, bestowed upon them a gold medal for their files, on account of their perfection or hardness of temper, superior cut and fine finish. When it is understood that the Franklin Institute since its incorporation in 1848 has only bestowed forty-two medals of gold, an average of one a year, and that this medal is only given for new inventions or unexcelled productions, the value of the same may be properly appreciated. S. F. Myers & Co., of New York, are the general agents for the "Gold Medal Files. They carry a full assortment of the same. They are recommending them to their customers as being all that is claimed for them, and selling them at prices below the imported article. As a matter of fact, they are made under the same secret process of hardening as the renowned Stubs & Grobet goods, and are of exactly the same patterns and sizes. S. F. Myers & Co. will soon have a catalogue in press for these goods, which they will forward to the trade on application.

—The Schmiedbarenguss Furnace Co., of Newport, Ky., announce that they have reduced the price of aluminum from $2.50 to 75 cents per pound.

—In a full description of the Stewart Building, Chicago, the Chicago *Times* of November 9 devotes considerable space to a history of the firm of Lapp & Flershem, which occupies a goodly portion of the building. C. D. Peacock, who occupies the corner store of the structure, comes in for a brief sketch.

—Herman Goldsmith, 33 and 35 John street, New York, has been in Europe for the past fifteen months selling to the American trade. He makes a specialty of handling fine rubies, pearls, sapphires, opals, spinels, and in fact all kinds of fine precious stones. He is always open to fill any order, small or large, and gives strict attention to orders to match any kind of precious stones. He has now some fine spinel rubies, alexandrites, Siam rubies, etc. Though his trade is considerable, he seeks additional patronage, and dealers should inquire for information regarding prices and goods.

—The Waltham Dial Company, Waltham, Mass., posted last month the following notice: "We do not believe that workingmen and women should be compelled to work ten hours per day, and therefore fix our working hours at 7 A. M. to 12 M. and 1 P. M. to 5 P. M., and will pay you for those nine hours per day the same as we have been paying for ten hours, and which is now the standard prices in our trade. Our margin of profit is very close, and we are probably less able to do this than other manufacturers, and we shall therefore expect all to do their duty and give us their best and fullest efforts, and set a good example to the many we expect to employ on the same conditions."

—The International Aluminum Works, of 86 New street, Birmingham, England, and 53 Maiden Lane, New York. manufacture electro-aluminum gold, bronze solution, which deposits "bright," and can be burnished or buffed. The deposits can be varied to give shades from 8 to 18k gold in color. They also make electro-aluminum solution, which, it is claimed, when burnished resembles silver in appearance; also electro-platinum and magnesium solution, the first of which deposits platinum in a bright state, while the second deposits white, resembling silver. The inventor of these processes is H. Gilbert Coyle, who has had twenty-five years' experience as an electro-metallurgist. Full information can be obtained from the American department, 53 Maiden Lane, New York.

—The following communication, signed "Northside," appeared some days ago in the *Free Press* (Waltham): "There is one of our prominent citizens, whose name has not been pressed as a nominee for Mayor, but who would make a most excellent one. I refer to Treasurer Ambrose Webster, of the American Watch Tool Company. He is a very successful business man, thoroughly conversant with our city through a thirty-five years' residence, wide awake as to our city's needs, earnest, honest, progressive. Whatever his hands find to do he will do with his whole might, whether in the way of progress or reformation." The CIRCULAR, which is thoroughly acquainted with the life and character of Mr. Webster, can heartily endorse the sentiments of "Northside."

—A recent visit to the American Horological Institute, 1723 Chestnut street, Philadelphia, revealed its enterprising management in a contented frame of mind, well satisfied with their success for the past year. W. H. Dotter has retired from the position of Secretary of the Institute. Who will be named to fill the vacancy the management has not decided, but a Western man of marked ability will, it is thought, be Mr. Dotter's successor. The reporter was shown a movement in process of completion by one of the pupils, Mr. H. W. Hartung, of California, which combines several novel features, among which is a jeweled main wheel arbor, although the watch is of the going barrel type. It has a chronometer escapement and is jeweled throughout, and is completely anti-magnetic.

—The Board of Managers of the New Lebanon Hospital have bought the extensive piece of property from the Ursuline Convent on Westchester avenue, New York. As the benefits of the institution are open to all people on a purely unsectarian basis, the management is in receipt of many generous subscriptions. Mr. Peabody, of A. Peabody & Co., 182 and 184 Broadway, represents the hospital among the jewelers, and will be pleased to receive contributions from the trade. Among those who have already subscribed are Louis Strasburger & Co., S. Eichberg, H. Muhr's Sons, Max Freund & Co., B. Lilienthal, S. F. Myers & Co., M. J. Lasar, Simon Van Moppes, Alois Kohn & Co., Oppenheimer Brothers & Veith, Isidor Elbe, Maurice Weil, Sol Davidson, Stern Brothers & Co., Jacobson Brothers, L. & M. Kahn & Co., Henry Dreyfus & Co., A. Wallach's Nephews and A. Peabody & Co.

—After this date each "C" Key manufactured by Kendrick & Davis, Lebanon, N. H. will have the size of square stamped on it.

—W. F. Nye, the well known manufacturer of watch and clock oils, has added an extension to his factory, 50x60 feet, two stories, to accommodate his increasing trade in his delicate oil, and has also just added a complete electric light plant.

—One of our oldest and most reliable houses is that of T. B. Bynner of 177 Broadway, New York. He has at all times a fine stock of diamonds and gold jewelry, as well as all grades of rolled plated jewelry, and he has especially interested himself in having all the best selling styles for the holiday trade. He makes a specialty in diamonds, pearls and opals.

—Cattelle & Decker, 20 Maiden Lane, New York. mention in our advertising columns a few of the solid silver novelties which are having an extensive sale. They state it is impossible to comply with the demands often made on them for selection packages, as their factory is running overtime to fill orders. At other seasons of the year, it is their desire to accommodate parties to the fullest extent possible, but it cannot be done just before holidays.

—E. L. Cuendet, 90 Chambers Street, New York, is constantly receiving consignments of musical boxes of the best qualities from the factory in Europe, which is one of the oldest in the trade, having been established in 1828. Mr. Cuendet invites the trade to call on him and examine his stock, or write to him for a catalogue. He is sure to give satisfaction.

—One of the most attractive gold rings on the market is that made by I. Michelson & Co., 3 Maiden Lane, New York. The ring is heavy and has a handsomely engraved raised initial; it is also furnished in Masonic emblems, Knights of Phythias, Odd Fellows, and other societies' ensignia. An important feature of this line of goods is its unusually low price, which is only possible by reason of the large quantities produced, the heavy demand for them, and the special offers that manufacturers make to dealers. Messrs. Michelson & Co. make a very extensive, salable and cheap line of gentlemen's rings. The house guarantees the quality of their goods.

—Day & Clark, goldsmiths of 10 Maiden Lane, New York, are in readiness for the highest class of holiday trade, with a magnificent line of bead necks, bracelets, brooches, lace pins and diamond covers. Their line of gold bead necks is very extensive in either plain Roman, plain polished or vermicelli finish, and in thirteen different sizes, from one to seven strands, strung either on silk or solid link gold chain; their curb and link bracelets can be had either with or without diamonds. This firm are purely manufacturers, and selection packages can be sent to the trade on proper references. Their San Francisco office is 116 & 120 Sutter street, Phelps & Miller, agents.

—R. & L. Friedlander, 65 Nassau street, New York, desire to inform the trade that they allow a trade discount of 50%, besides the usual cash discounts, on all goods advertised in the new watch and jewelry catalogue which they have just issued. The firm purposely left out the discount sheet to protect the trade. Any watchmaker or jeweller who has as yet not received the new catalogue can have one by applying for it. A business card must accompany the application, as the publisher will positively not send them to any person outside of the trade. Messrs. Friedlander have ready for delivery, since November 1st, a large stock of Monarch movements, which are built on the model of the higher grade of American movements. They are all made with 15 jewels only. It will prove advantageous to dealers to keep a stock of them on hand. Samples and prices can be had upon application.

—The United States Government last spring contracted with the noted scale maker, Henry Troemner, Philadelphia, Pa, for an unusually fine balance for use at the United States Assay Office, New York, which has recently been finished and placed in position. It is made to carry 10,000 ounces in each pan (about 700 pounds avoirdupois). The contract specified that the balance must turn with $\frac{1}{100}$ ounce when loaded to its full capacity. The beam and its hangings, together with its full load, will weigh almost a ton weight. To put this in motion with less than five grains will indicate at once to what perfection all the working parts must be brought. When the balance was placed in position, a careful test was made by the superintendent of the assay office, and the balance loaded with 10,000 ounces of gold bricks. The addition of the extra $\frac{1}{100}$ ounce immediately started the whole mass in motion and demonstrated that the remarkable sensibility had been secured. This balance is without doubt the most elegant and most reliable device of its kind in the world.

—L. Hammel & Co., of 35 Maiden Lane, New York, have been appointed general agents for the celebrated "Star" watch keys, manufactured by the Acme Watch Key Co., of Montpelier, Vt.

—The "Henrietta" is the latest design in watch cases put on the market by Weis & Oppenheimer, of 192 Broadway, New York. An illustration of it will be found in our columns which speaks for itself.

—The Sterling Co, Providence, R. I., find that they have introduced almost too many novelties this season, as in spite of running overtime for some weeks past, they find it difficult to supply the ever-increasing demand, especially for their toilet articles and brushes, which, as the season advances, gain additional popularity.

—Goods especially adapted to the holiday trade, are gold pens, pencils, tooth picks and novelties. Of such articles, D. F. Foley & Co., 180 Broadway, New York, are displaying a larger variety than ever before. During the comparatively few years that this house has been in existence it has acquired a foremost position among the firms in its line of manufacture, owing mainly to the excellence of its wares.

—Sussfeld, Lorsch & Co., of 13 Maiden Lane, New York, have issued to the trade a circular in which they state that they are endeavoring to have a ruling made by the custom house authorities which will prevent the rise of 15 per cent. in the duty on optical goods. The firm state that such of their customers as purchase goods between now and January 1 will be given a rebate of the percentage they are able to make by this movement.

—Mr. Chas. J. Cooke, of B. J. Cookes' Sons, Philadelphia, celebrated recently the 15th anniversary of his wedding, and received congratulations and presents from numerous friends. Among the very handsome presents received was an onyx set, clock and candelabra, from the Ansonia Clock Co. Ben Cooke of the same house has returned from a successful business trip, and the firm anticipate having very little leisure from now until the first of the New Year.

—E. P. Roberts & Son, of Pittsburg, are exhibiting in the window of their store on Fifth avenue a tiara of diamonds said to have been worn by the Empress Josephine, of France, on state occasions. It consists of nearly five hundred diamonds, and is in the form of sprays and flowers converging toward the centre and surmounted by the French lilly. The workmanship is intricate and delicate. The jewel, it is asserted, was made nearly two hundred years ago and is valued at $20,000.

—Ostby & Barton, the great band and ring manufacturers, of Providence, find the recent doubling of their factory facilities altogether insufficient to meet the requirements of their enormous business, and they have consequently rented the entire building at 80 Clifford street, with the exception of the first floor, and will soon have in working order the largest and best equipped ring plant in the world, using the three upper floors for manufacturing purposes and the lower one for the packing-room and offices.

—L. H. Keller & Co., 64 Nassau Street, New York, one of our largest firms dealing in watch materials and tools are giving every satisfaction to the trade with the American mainsprings with the trade mark. It is claimed for this spring that its pulling power is 15 per cent. more than the ordinary spring. Being a graduated spring, its force is about the same whether nearly run down or nearly wound. It is very elastic and lively, and with ordinary care does not set or break, its non-liability to break being one of its characteristics. It has rounded edges, so that it does not bind in the barrel, but slips freely. For the last eighteen months during which this brand has been before the trade, it has given universal satisfaction, and a trial will convince those who have not already used it of its superiority.

—Some postmasters are very accomodating, as the following story is in evidence. Two weeks ago, R. & L. Friedlander, of New York, received recently a letter from a John Morgan, of Hyde Park, Pa., asking for one of their catalogues. As he failed to enclose his business card, the firm wrote to the postmaster, asking him for information regarding Mr. Morgan's avocation. Two days later Messrs. Friedlander received a long slip of paper, 24 inches long and 3 inches wide, upon which was written the names of 26 "John Morgans." The slip was headed: "There are 26 John Morgans in our town, as follows; you can take your pick out of the lot." Not a jeweler was in the lot. It is needless to say that "Mr. John Morgan, of Hyde Park, Pa., did not receive one of their catalogues. The list was received from Scranton; Hyde Park is probably a suburb of that town.

—Wolfsheim & Goldsmith, manufacturers of jewelry trays and cases, 52 Maiden Lane, New York, have a number of odd designs, such as clover leaf and flower trays, semi-circular ring trays, etc., that are almost indespensable now-a-days in dressing windows. They are rushed with orders on these special goods, as well as on their general line.

—W. F. A. Woodcock's School of Watchmaking, at Winona, Minn., is said to be in a flourishing condition. He has pupils under his charge from all parts of the country, as well as a number from foreign lands. Upon graduating they generally secure good situations, as there is at the present time a lack of competent watchmakers in all the centers of trade.

—Especially appropriate holiday gifts among a large portion of the public are the rosaries and crucifixes manufactured by John A. Riley, 860 Btoadway, New York. They are made in six sizes, in 14k gold and sterling silver, and are extremely handsome. They would undoubtedly prove a profitable feature in the jeweler's stock. An illustration of these handsome articles is given on another page of this number.

—Simpson, Hall, Miller & Co. appear in our advertising columns with another new tea set of six pieces, silver embossed. The elegant line of repousse goods of which this is a specimen, for fineness of quality and moderation of price, they claim has no competition. The elegance of its finish is particularly noticeable, and if worked by hand would render the cost so high as to place it beyond the reach of the majority of purchasers, but by the use of a patented process they are enabled to offer this beautiful set at a price within the reach of all. These repousse goods are particularly desirable on account of the facility with which they are cleaned, even bruises and dents, owing to the character of the embossed work, do not mar its appearance nearly as much as in goods of ordinary finish.

—The art of wood-staining in this country has been one of the forgotten arts until within the past year, when the firm of Auffermann & Co., possessing a secret process in wood-staining called the systéme Auffermann, in high favor in Europe, established themselves in New Yoik and began to introduce their beautifully stained veneers in this market. The process is so perfect that it stains the wood through and through and not superficially as is the case with almost all modern processes, and the effects produced are simply superb, the graining, knots and other peculiarities of structure in the wood being brought out in exquisitely shaded, glossy effects, in all the delicate plays of color. These woods, when highly finished, are unsurpassed for jewelry and silverware cases, the silver gray tones especially forming a contrast of singular beauty. They will also be found available for other purposes in the line of store decoration. The firm of Auffermann & Co., 211 East 42d street, New York, are the sole possessors of this wonderful process on this side of the water. They furnish the stained material of any desired color and quality to be made up into cases, plaques, moldings and panels, and will cheerfully send samples of their work upon request.

—Gardner, Mass., in addition to its chair works and other important industries, maintains a very well equipped and prosperous silverware factory—that of Frank W. Smith. Although established but four years, the business has developed with rapid strides, and from present indications an enlargement of the present facilities will soon be necessary. Mr. Smith is a thoroughly practical silversmith, familiar with every branch of the trade, and to his capabilities in this line he adds a refined taste in the selection of designs and a conscientiousness that will not permit a piece of goods to leave the shop unless finished in the very highest style of the art. These qualities in the product speedily won the attention of dealers in all the art centers of the country, who desire an artistic and perfectly finished article. Prosperity has been the natural result, and to-day some fifty artisans are here engaged in producing novel styles of plain and fancy spoons, as well as a full line of hollow ware. The factory is well ordered. The newest machinery is in use, as well as the best brains to guide and control it. But while utilizing every mechanical improvement that can be obtained, certain of the old-time hand processes that can only be sacrificed at the expense of quality in the work are still retained. A combination of machine and hand work secures the best and most artistic results. As an example of the fine taste that prevails in the whole establishment, we may mention a very unique little circular which Mr. Smith recently sent out to his trade to apprise them of the coming of his travelers. It was original in conception and elegant in execution, like the silverware of the manufactory it emanated from. Mr. Smith has in preparation some very striking and beautiful designs in tea sets, which he will shortly submit to the inspection of the trade.

—The handsome piano and banquet lamps now produced in antique brass and old silver finishes, are as popular a line of goods as the jeweler can put in as holiday specialties. There is no better place to make a selection of these goods than the elegant showrooms of Edward Miller & Co., 10 and 12 College Place, New York. This house makes nothing but lamps, and produces a variety that cannot be surpassed. All their lamps are provided with the celebrated "Rochester" burner. Dealers in need of anything in this line should pay them a visit.

—S. F. Merritt, Springfield, Mass., the largest manufacturer in the country of eye-glass chains and hooks, is beginning to think about enlarging his quarters, so phenomenal has been the growth of his business during the past year. Mr. Merritt is a pusher, and besides being a thorough mechanic of ready inventive resources, he has abilities as a salesman that would put many a younger man to the blush. He is shaking up some of the dry bones in his department of manufacture, and says if he were only a little younger, he would turn it bottom side upward. His record for the past two years shows that these are not idle words.

—One of the most successful devices in jewelry is the patent spring back stud, manufactured by Larter, Elcox & Co., 41 Maiden Lane, New Yoak. The principle of the action is so simple that it almost defies description. The dealer should send for a selection package and see for himself. They will go into any eyelet intended for a spiral, and are perfectly safe, strong and durable. This stud is made in four sizes, in polished and Roman gold, also in moonstone and other fancy patterns. Illustrations of the stud are given on another page. Larter, Elcox & Co. are also manufacturers of gentlemen's seal and fancy rings, and ladies and children's rings in great variety.

One of the most creditable catalogues of the season is that of Chas. F. Irons, Providence, R. I., the well known manufacturer of emblems, charms and Masonic goods. Mr. Irons has for years devoted his energies to this particular line of manufacture, and to-day he is probably as well prepared to fill any orders in his specialty as any emblem maker in the country. The book before us is a substantial volume bound in cloth and filled from cover to cover wiih designs of badges, pins and charms of all kinds, many of them beautiful lithographic representations. It occupies a unique position in trade catalogue literature, and will be extremely valuable as a work of reference.

—In accordance with their annual custom S. F. Myers & Co., of No. 48 and 50 Maiden Lane, New York, presented to each of their employees on Thanksgiving Eve a well-fattened specimen of our toothsome national table bird, a big gilt-edged Connecticut turkey. Remembering the many good things bestowed upon them during the past prosperous year, the firm cast "an anchor to windward," and in the turkey presentation they included many who are not their employees, but who appreciate a good turkey. Among the fortunate were all the expressmen, letter carriers, messengers, private watchmen, etc., of Maiden Lane, and many a happy family dinner was cheered by the great firm's generosity. Deeds like this sing their own praises. Nearly two tons of the national table bird were required for the purpose.

—Auctioneers A. H. Muller & Son offered on Nov. 26 in the Real Estate Exchange, New York, Nos. 21 and 23 Maiden Lane, 50.6x85 4 between Nassau street and Broadway. It is a four story buiiding on leasehold ground—known as a Reformed Protestant Dutch Church lease—for twenty-one years trom May 1, 1890. The present ground rent is $9,000 per annum. The following were some of the peculiar conditions of the sale, which was held by order of the trustees of William H. Hays, deceased:

If before May 1, 1895, a building worth not less than $50,000 is erected, present leases to be cancelled and new lease to expire in 1911 to be renewed; at expiration of that lease lessors to pay for building or give new lease for twenty-one ycars at rent to be agreed upon. If new lease given in 1911, on the expiration of that lease in 1932, lessors are to pay for building or give new lease until 1953. In 1953 lessees are privileged to remove building.

This identical building—the ground rent having already been given above—to-day brings an annual rental of $20,000. And when the first bid—$30,000—for this leasehold property was spoken in a loud voice there was a hush, a perfect silence among the bargain hunters, who thought apparently they could secure it for a mere song. But, leasehold as it was, up and up went the figures until finally the property was sold for $57,500 to Frank K. and W. H. Hays. Among the firms in this building are Cross & Beguelin, Aikin, Lambert & Co., Enos Richardson & Co., E. Aug. Neresheimer & Co., and A. Alling Reeves.

—John Stark, the well known Walthan lathe maker, is driven with work in all departments of his business. The ingenious little mainspring winder of his invention cannot be turned out fast enough to satisfy the present demands.

—The "Daylight Lamp," manufactured by the Craighead & Kintz Company, 33 Barclay Street, New York, is rapidly making its way into popular favor. Some of its merits are enumerated in their advertisement on another page of this issue.

—"Verily, of making many goods there is no end," one is tempted to exclaim in turning over the leaves of the new catalogue just issued by the R. Wallace & Sons Manufacturing Company, Wallingford, Conn., filled with handsome illustrations of their mammoth line of hollow ware, flat ware and novelties, both in plate and in sterling silver. The growth of the business of this concern is well shown by the growth of their catalogue.

—Bracelets are very popular this season, particularly the slender wire bangles, with padlock and key or flower ornaments. A. Alling Reeves, 21 Maiden Lane, New York, makes a specialty of these goods, and for variety of design and moderate price his line cannot be surpassed. His stock is now so complete that dealers running short on holiday stock can be sure of having their orders filled promptly. He also manufactures a very salable line of 14kt. jewelry.

—W. E. Moutoux, of 2345 Eighth avenue, New York, has issued a new catalogue of hair jewelry, etc., for 1890, which includes all the standard and new styles of the business. Mr. Moutoux has long stood at the very head of artists in this branch, as a glance at the many beautiful designs in his store testifies, and orders entrusted to him will be promptly executed at reasonable rates. Mr. Moutoux is a veteran officer of the late war and a member of Koltes Post 32 N. Y. G. A. R., and his many comrades and acquaintances throughout the country will be glad to learn of his successful career.

—Articles in good demand in this season of the year are trophies and prizes for athletic competitions, horse shows, flower shows, etc. Rogers & Bro. the widely-known manufacturers of plated ware, have in stock fully a half hundred such articles adapted to every variety of sport and fair. Among the novelties which this house have placed this season on the market is a silver plated fern dish for growing ferns. This article is intended to be placed in the center of the dining table. Other novelties are long silver plated cases for farina cologne bottles, and small lamps which may be placed in the center of candelabra.

—A Pinover & Co., 33 Ann Street, New York, who are known throughout the country as manufacturers of fine diamond jewelry, have prepared this season an unusually large line of these goods, containing a great variety of new patterns. The line includes rings, earrings, lace pins, hair ornaments, bracelets, studs, lockets, brooches, and pendants. Especial attention is directed to their line of pendants, of which they produce a very extensive assortment, and their marquise rings with ruby and emerald centers. These classes of goods are very popular at present. The pendants are made in various elegant shapes, stars, bugs, etc., and come in combination styles, being adapted to the neck and hair. This firm employ diamonds in all the goods they make, combining them with sapphires, rubies, emeralds, opals, etc. They also make a large line of separate mountings.

—Pretty selections for the Christmas trade are seen in the stock of articles of the Nonmagnetic Watch Co. In gentlemen's 18 size, 18 and 19 lignes, and 16 size, we note watches with diamond ornamented, plain, engine turned, fancy decorated cases, also with plain and oxidized silver cases, open and hunting cases, plain cases with staple styles of engravings, handsome enameled black steel open faced cases, cases with so called Spanish decorations, consisting of black steel ground with gold inlaid, also odd though attractive designs in the same style. Besides these the company are showing some extra thin gentlemen's watches, and a line of complicated watches, minute and quarter repeaters, single and double chronographs and split seconds with and without minute registers, and many other combinations such as calendars, perpetual calendars, etc. In ladies sizes the selections are particularly beautiful. The cases are either open, hunting and half-hunting, and plain, decorated, engine turned, or enameled. In the latter class a large variety are shown, every sample containing some individual beauty. A line of ladies watches worthy of particular notice are in antique cases, of various designs; again a line with oddly designed dials. The company also, of course, have the separate non-magnetic movements, and some appropriately cased watches for electricians.

—The Faneuil Watch Tool Co., Faneuil, Mass., are preparing to increase their production to meet the growing demand for their "Rivett" lathe, staking tool and line of watchmaker's small tools. They feel much encouraged at the reception their goods have met with from the trade.

—The building at the northwest corner of Wabash Avenue and Congress Street, Chicago, Ill., has been leased to Morse, Mitchell & Williams, wholesale jewelers, for a term of ten years beginning May 1, 1890. The rental is not given but it has been reported to be $27,500 with taxes and insurance.

—E. P. Baird & Co., the manufacturers of wood fiber clocks, Plattsburg, N. Y., have recovered from the effects of the recent fire in their works, and are in a position to fill orders. These clocks are coming into favor rapidly on account of their cheapness and the reliability of the movements employed. The firm are offering a prize of $25 for the best design adapted to their wood fiber cases.

—It is "the same old story" regarding the demand for the product of the E. N. Welch Manufacturing Company and the Boston Clock Company. Both these large and prominent corporations are more than busy running day and night to enable their agent, W. H. Atwater, at No. 13 Maiden Lane, New York, to keep his promises to his numerous customers and friends, which he is bound to do at all hazards.

—F. M. Whiting & Co., the silversmiths of North Attleboro, Mass., wish to remind the trade that they are ready with an excellent stock of small novelties to replenish dealer's supplies which are so apt to run short just about this time. These goods are all of the newest pattern, and will be found very salable now. With their exceptional facilities no delays will occur in the filling of orders, an important item during the holiday season.

—F. Mauser & Co., silversmiths, 33 Union Square, New York, report a good fall trade with plenty of orders ahead. Their removal to the city has been fully as advantageous as they expected, and in consequence they have been enabled to enlarge and improve their line in many ways. In stationery and toilet novelties they present a fine assortment of patterns mainly in the popular rococo styles. In hollow ware, bowls, pitchers, etc., they also show some fine examples of the art.

—J. T. Scott & Co., 4 Maiden Lane, New York, again call attention in their full page advertisement to their complete stock of diamonds, and their new system of grading them. The firm report that this system has met with great favor among the trade, and that they have received numerous favorable endorsements regarding it from their customers. This system is fully stated in the advertisement, and such dealers as have not yet given much attention to it, will upon a reading appreciate the advantages in both buying and selling diamonds which will accrue to them upon its employment.

—Hamilton & Hamilton Jr., the rolled plate chain manufacturers of Providence, R. I., have thrown down the gauntlet and made a firm stand against the abuse of consigning goods. Their $1,000 offer to anyone who would prove that they consign goods or let them out to be returned at the close of the season is still open, and is still unchallenged. In the factory a full complement of hands are busy turning out the well known "H. & H." brand of chains which must be had even though they can't be got on consignment. It requires no little courage and determination to do this in the face of the present competition, but this well known chain house is not lacking in these qualities. As their chains are not lacking in qualities that create and retain a demand, they are in a fair way to carry their point. At any rate they are to be congratulated on their independence and consistent adherence to business principles.

—Albert Berger & Co., 47 Maiden Lane, New York, importers and manufacturers of the W. B. Co. watch glasses, had a very good fall trade. Their stock of watch glasses and ground spectacle lenses (which are a specialty with them) is immense; no one can form an idea of the extent and variety of the assortment which this firm carry without a personal inspection. Besides the white lenses of all styles, they have blue, smoke and pink lenses, in coquille's, planos, peris, convex and peris concave. As for the quality of the glass, the raw material, the principal opticians know it well and appreciate it; it may, however, be an interesting fact for all to know that it is of their own manufacture and cannot be supplied by any other house. Messrs. Berger & Co.'s. stock of spectacle frames is also very large, and comprises gold, silver, nickel and steel, and the customer must be hard to please indeed who cannot find what he wants. This is one of the oldest houses in the Lane, and it deserves the patronage of the trade.

—A. J. Groenman & Co., 80 Nassau Street, New York, have a well-equipped plant for cutting and polishing diamonds. They are skilful artisans and turn out excellent work. They make a specialty of small melée.

—Ferdinand Fuchs & Brothers, Silversmiths, 810 Greenwich Street, New York, have had a very prosperous fall trade, which they attribute to the style and quality of their goods. Their bon bon dishes, etc., have taken well with the trade.

—Although but a comparatively short time in business, Bippart & Co., of Newark, N. J., have one of the most popular lines of fine goods before the trade. Their rapid advancement on the road of success is chiefly accountable to their practical understanding and untiring efforts of the individual members of the firm.

—J. B. Laurencot has still a few of his importations of French clocks left, which are being closed out at an immense reduction from present prices, and which he has determined to dispose of before the year is ended, leaving him free to devote his energies in future to the importation of optical goods. E. W. Laurencot will attend to the buying of all their optical goods in the European markets.

—In a successful business career of over a quarter of a century, J. Beck & Son, of 10 Liberty Place, New York, have acquired an enviable reputation as manufacturers of solid gold and silver chains. In this line they stand high in the category of manufacturers, which position is due to the reliability of material, the beauty of design, and the perfectness of finish of their products. The firm work independently, seek for novelties in style, and do not follow in the wake of other manufacturers.

—Watchmakers and dealers who have wheels and pinions to cut would do well to remember the name of Henry Loriot, of 130 Fulton Street, New York. But this name in connection with this line of work is undoubtedly known throughout the country, for Mr. Loriot has been a useful adjunct of the trade for fifteen years. He has recently fitted up his shop with the best improved machinery for cutting clock and watch wheels and pinions of any number of teeth, and also with machinery to make cutters to give the teeth proper epicycloidal shape. He is thus in a position to supply work in any large quantity, and with promptness. The character of his work is of the best, as his long years of experience guarantees. He also keeps on hand all kinds of movements and parts, both English and French.

—Business at the silverware factory of W. B. Durgin, Concord, N. H., is unusually brisk. This house has for years enjoyed a very high reputation for the superiority of its manufactures and particularly in flat and fancy flat hand made sterling silverware. Although equipped with the most modern machinery, yet it is found desirable to retain some of the old hand processes as admitting of greater range and larger variety of styles and shapes, and allowing for changes in size to suit the taste of their patrons. Mr. Durgin's claim as the only extensive manufacturer of strictly hand-made flat ware is unchallenged, and an examination of these goods will sustain their claim to superiority in several particulars, especially in elasticity and the retaining of style and shape under severe wear. In the other departments of work such as hollow ware in chaste mounts or repousse, or in novelties this house aims to be classed as a leader, and includes in its force of operatives artisans of correct taste and deftness, and all its manufactures are characterized by utility combined with practical and desirable wearing qualities. To fine workmanship Mr. Durgin claims no article complete unless of good weight and balance, and therefore has never been a competitor with the manufacturers of lighter goods made only for show. Under the severe discipline of the trade of forty years ago he thoroughly learned the lesson of merit and utility, and this element will be found in all his work to this day. It was thirty-seven years ago that a modest man just out of his apprenticeship, settled in Concord with his trade and energy as his capital. He has seen his business grow to its present large proportions, his Yankee adaptibility keeping pace with every branch of his business, and giving his goods the justly high reputation they enjoy to-day. In this work he is ably assisted by his son, George Francis Durgin, who has grown into the business until he has become as much a part thereof as the proprietor himself, and thus equipped it may be safely predicted that whatever bears the trade mark of this house has all the merit that thorough care and correct taste can give. Too busy to enter largely into politics, yet both these gentlemen realize it a duty to serve the State when it may be done agreeably to the will of the people, and Mr. Geo. F. Durgin backed by a handsome majority will have a seat in the next House of Representatives of his State, where his abilities will undoubtedly secure for him a commanding position.

—J. W. Richardson & Co., 194 Broadway, New York, the well known manufacturers of solid gold emblems, charms, pins, etc., wish to remind the jobbing trade that their illustrated catalogue of the above goods will on application be sent free to any jobber in the United States.

—H. M. Smith & Co., 83 Nassau Street, New York, jobbers in American watches, still continue their specialty of the manufacture of gold pens in plain and fancy handles of very tasty designs. They are also special agents for the Paul E. Wirt fountain pens. Buyers can get the best terms from this house.

—Edwin A. Thrall returned from his European trip last month, his health being much improved by the ocean voyage. On his arrival at his office he was gratified at the silent tribute of esteem which his employees had thoughtfully placed in the window in the shape of a design representing the word "Welcome," worked out in gold watches.

—The firm of Hollinshed Bros., jobbers, 806 Chestnut Street, Philadelphia, has been dissolved ; Henry Hollinshed, Jr., retiring to engage in the practice of law. The business will be continued by the other partner, Charles Hollinshed, who will seek to retain the good will of the retail trade by the same liberal and enterprising policy that has won for the firm the success it enjoys to day. No change will occur in the firm name.

—We are pleased to acknowledge the receipt from O. W. Bullock & Co., Springfield, Mass , of the latest edition of their catalogue of watchmaker's and jewelers' tools. It is considerably thicker than the previous issue and contains illustrations of a number of new tools, which this house is constantly adding to its long list of manufactures. Retail jewelers and watchmakers throughout the country should have a copy of this from which to order of their jobbers.

—J. Hoare & Co., cut-glass manufacturers, Corning, N. Y., are the oldest glass cutters in the country. They produce at their works some very fine examples of the art and deal largely with the jewelry trade. In their stock can be found a full assortment of everything the trade requires in this line, including both stem and hollow ware. One of their specialties, which they illustrate in this issue, is an electric light bulb of elegant design, which gives great brilliancy and effect to the light.

—Mr. Parsons, of the Parsons Horological Institute, and his assistants have succeeded in getting the students so deeply interested in their work that they are not only working overtime, but during evenings as well. Some of the boys have been doing some very fine work in the way of making the various kinds of escapements on a larger scale than the pocket watch. This work seems to be invaluable to the students, and they have certainly shown remarkable skill in its execution. More students have come in during the past sixty days than ever before in the same length of time.

—We are in receipt of the 14th annual illustrated catalogue of "The Busiest House in America," just from the press. It is an immense affair, consisting of 625 large pages, handsomely bound in cloth covers. The volume is without name or address, the reason for which is to avoid the possibility to retailers of competition from parties outside the trade. As the retailer's name and address is printed on the cover, the volume is one which the retailer can virtually call his own. Lapp & Fleisham, 100 State street, Chicago, Ill., who issue the catalogue, announce that the volume gives illustrations and prices of but a few leading and staple styles in their stock. Their stock must then be enormous, for the illustrations can be numbered by the hundrnds. A perfect key to discounts is mailed separate. The book will be sent to any dealer upon application accompanied by business card.

—The Spencer opera glass holder is in greater demand this season than ever before. The "Victory Grip" is a success. In this holder there is no spring or delicate fixtures to get out of order or become broken. The clutching device is simple and positive, and the beauty of design, quality and price, all speak for them. The Spencer Company are showing also a larger line of opera glasses this year than in any previous season. The growth of this department of their business has been remarkable, but not at all surprising for the name of "Audemair" has become synonymous with superiority in opera glasses. The trade should watch this company's Ads. on 2d page of cover, and send for their "Special" on opera glasses and opera glass holders and for their catalogue of optical goods, circulars of new "Perfected" bifocal lenses, new eye-glasses, Spencer's new ophthalmascopes, &c. "Visual Defects and their Corrections," by F. Ogden Stout, M. D., has just come from the press.

—The Du Bois Watch Case Co., Morton street, Brooklyn, are making a specialty of fancy ornamented cases in colored gold. The designs offered by them are almost unlimited.

—The Pairpoint Manufacturing Co., New Bedford, Mass., are having great success with their line of "crush" ware, a corrugated or crumpled effect, which is finding great favor this season. It is made in all the popular forms of plate and is generally considered one of the most salable patterns now on the market.

—Fowler Bros., Providence, R. I, wish to deny emphatically the rumor that upon the retirement of Mr. C. A. Fowler from the firm, on January 1st, their goods will be marketed exclusively by a New York jobbing house. Their goods will continue to be sold through the general jobbing trade without distinction or favor.

—Koch & Dreyfus, jobbers, of 22 John street, New York, are abundantly satisfied with the season's showing. Their trade has increased phenomenally along all lines, their six travelers being kept busy skurrying over the country, gathering in the orders that are a natural result of the enterprise and push of the house.

—Wm. F. Chambers, long and favorably known to the jewelry trade, has engaged with Fred. I. Marcy & Co., of Providence, as New York representative, also visiting Philadelphia, Baltimore and Washington. Mr. Chambers promises some very startling novelties in the coming season's samples of the popular "Acme" sleeve button.

—At the Waltham School of Horology, D. D. Palmer proprietor, many improvements are being introduced. Steam-heating apparatus has been put in through the entire establishment, and a dynamo furnishes the power for the school-room. The steady growth in the attendance is highly gratifying to Mr. Palmer, and speaks well for the quality of the instruction imparted.

—J. F. Fradley & Co., silversmiths, 23 John street, New York, are producing some very handsome hunting-flasks, ornamented with applied dogs' heads, in gold, with diamond eyes. The demand that has been manifested this fall for the rich class of sterling silver hollow ware turned out by this house is truly astonishing, and is as complimentary to the skill and taste of the house as it is to the discrimination of the purchasers.

—In 1881, Sig. Hirschberg commenced business as a diamond importer in a very small way. In the last decade he has made for himself a recognized position in the diamond industry of the country and has at the present time a fine and large assortment of diamonds and precious stones. He also makes a line of diamond mountings in original and handsome designs, excellent in execution. Mr. Hirschberg's office at 78 Nassau street, New York, is one of the most attractive in the jewelry trade.

—M. B. Bryant & Co., the ring makers, 10 Maiden Lane, New York, have demonstrated to the retail trade the importance of the attractive display of goods. Their well-known "Bryant" initial ring is put up in neat trays containing dozens or half-dozens. The goods are thus set off to good advantage, and the beneficial results are seen in a striking increase in the sales of the "Bryant" initial ring. Retailers who appreciate the force of this point will do well to bear it in mind in ordering initial rings.

Among the Watch and Clock Companies.

—The Manhattan watch factory is working seventy-five hours a week.

—The Elgin factory are now turning out nearly 2,000 movements per day.

—The Rockford Watch Company have just put the new 16-size ladies' watch on the market. It has 16 jewels and a new winding and setting apparatus.

—The New Aurora watch factory now employs about fifty hands. The machinery is receiving special attention, many mechanical improvements being in progress.

—The American Watch Company have just completed a rotary annealing furnace, the heat of which is furnished by gas. The work is slowly revolved, thus insuring an even heating throughout.

—Apropos of the announcement that the Otay Watch Company had been attached for $5,000, the San Diego *World* contained the following paragraph: "We regret exceedingly to learn that the Otay watch works need some solid backing in connection with some old debts which have lately matured. The works are on a paying basis, and the support of nearly sixty operatives and the community should see that no old debts block its success."

—It is said that the suits of the American Waltham Watch Company and the Elgin National Watch Company against the Illinois Watch Company, for alleged infringements of patents will soon be tried before Judge Blodgett.

—The watch department of the Seth Thomas Clock Co. is now employing 250 hands and turning out 80 finished movements per day. Eighteen different styles of watches are made, from the cheap key-wind to the 17-jewel adjusted stem-wind.

The Aurora factory is said to have 13,000 watch movements in the factory vault and finishing department. Until these are marketed the force will not be greatly increased. The foremen are busy arranging the departments and finishing up work on hand.

—There were on the time-roll of the Waltham factory, November 1st, the names of 2,792 hands, the largest number ever in the employ of the company, and these are all watch makers. The Waltham *Tribune* says it will not be a great while before the force will number 3,000.

—The new Westinghouse engine for the electric light department of the Elgin Watch factory has been put in place this week. It is of the largest size and makes the power sufficient to get all the possible benefit from the six dynamos. Over four hundred lights have been added to the circuits this season.

—The 16-jeweled Rockford movement, now nearly ready for the market, has been pronounced by judges to be very handsome. The Rockford Company are shipping watches in large numbers to Australia and South America. The rapidly growing countries of South America are bound to make a big demand for watches within a few years.

—The Railway King recently placed on the market by the Columbus Watch Company, has been so far shown to be but a small portion of the trade; yet the company are 2,000 watches behind on their orders. They claim it to be the handsomest 18 size full-plate movement ever made. It is damaskeened in gold or nickel. The company have just got out another new taking grade, the North Star, in nickel and gilt, 11 jewel, with micrometer regulator. The company claim to be overwhelmed with orders and turning every wheel to give their customers what they need of their justly celebrated goods.

The Other Side of Life.

THE TERRORS OF BANKRUPTCY.

First Merchant—Met Snodgrass last evening entering Delmonico's. He was dressed in the height of fashion, and a large and icy cigar was between his lips.

Second Merchant—Snodgrass? Oh, yes; he failed two months ago, and is trying to settle at ten cents.

LEFT AND RIGHT.

Bowles—My eyesight is affected, doctor.

Optician—Let me see. You are in a natural state. Your sight has left the left eye, but your right eye is all right.

Though diamonds should be worn only in the evening, black onyx jewelry may be worn in mourning.

A CONSUMMATION TO BE DESIRED.

In the newspaper office:

Competitor Damner—When I determine to settle down, I will seek out an armless woman.

Circulation Swearer—That'll be pleasant.

C. D.—Mightn't be so pleasant, but it will save me the engagement ring.

CRUEL MANHOOD.

Mrs. Chidwidler—Here's a person mentions, 'a blind man's repeater.' What is a repeater, Charley?

Mr. C—You're a repeater. Now let me read my paper.

HE KNEW.

"If you are blind, how do you know that dollar is marked?"

"Sure oi hov wan glash eye, sorr, an' it's thranshparent."



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THE JEWELERS' CIRCULAR
AND
HOROLOGICAL REVIEW.

OFFICIAL REPRESENTATIVE OF THE JEWELERS' LEAGUE, THE NEW YORK JEWELERS' BOARD OF TRADE, AND THE JEWELERS' SECURITY ALLIANCE.

It is also the Recognized Exponent of Trade Interests.

A MONTHLY JOURNAL DEVOTED TO THE INTERESTS OF WATCHMAKERS JEWELERS, SILVERSMITHS, ELECTRO-PLATE MANUFACTURERS, AND THOSE ENGAGED IN THE KINDRED BRANCHES OF ART INDUSTRY.

SUBSCRIPTION.—To all parts of the United States and Canada, **$2.00 per Annum,** Postage Paid. To all Foreign Countries, **$3.00 per Annum,** Prepaid.

☞ *All communications should be addressed to*

THE JEWELERS' CIRCULAR PUBLISHING CO.
189 BROADWAY, NEW YORK.
CHICAGO OFFICE, 125 STATE ST., Room 18.

☞ *Advertising rates made known on application.*



☞ A full Index to Advertisements and a Table of Contents wil be found on Page 5 of this issue.

Greeting to the Trade.

WITH the first of February THE JEWELERS' CIRCULAR enters upon the twenty-second year of its publication. Among the trade journals of the country it is a veritable Nestor, full of wisdom and ripe experience. Throughout its long and prosperous career, amid the many temporary aberrations of trade journalism in its special field, it has pursued unswervingly the interests of the retail jeweler. The reading matter offered in its columns has been the most select and apposite that could be obtained. The writers on its staff have been men of acknowledged authority in their several lines, every word of whose writings has been treasured up by the trade for study and frequent reference. No expense has been spared to make THE CIRCULAR in the widest sense a solid and representative trade journal. That this wise and liberal editorial policy has brought the success it deserved, the loyal support of the retail trade and the present undisputed supremacy of THE CIRCULAR as a technical journal for the watchmaker and retail jeweler, afford abundant evidence. Such being our good fortune, therefore, it is a pleasure as well as a duty, at the opening of a new year, coinciding so nearly with the beginning of another volume of our journal, to embrace once more the opportunity of thanking our stanch friends—our advertisers and esteemed subscribers—one and all, for the encouragement and support they have bestowed upon our honest efforts. Many of them were with us at the very outset, and have remained upon our books these two decades. It is indeed pleasant to look back upon the past, its unbroken record of prosperity and good-will, its faithful service on our part and its just return on the part of the retail jewelers, our public and our constituency. We would fain dwell longer on the backward view, but the past is the stepping-stone of the future, and if we would profit by it we must rise upon it to a wider vision. Still more alluring is the future prospect, and to that we would address ourselves for the moment, dwelling on the plans and innovations the management propose to introduce in the interests of both subscribers and advertisers for the coming year.

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ABOUT the first of February THE JEWELERS' CIRCULAR will be issued weekly instead of monthly, and with a guaranteed circulation of over 10,000 copies per issue—a larger aggregate circulation than any of the jewelry journals. It will become in the fullest sense a trade newspaper, handy in form, typographically neat and editorially substantial. It is the intention of the management to make the news department more complete than any now available to the trade, arrangements having already been perfected to that end. While the aim will be to place before the entire trade the current happenings in succinct form, special attention will be paid to news of interest to the retail jeweler and watchmaker. The departments, technical and kindred in nature, that have given THE CIRCULAR the enviable prestige and popularity it enjoys to-day, will not be abandoned. We shall still cater to the watchmaker and retail jeweler. Many of the present contributors, long-standing favorites with the trade, will be retained, though their contributions will be supplemented by entirely new and equally desirable features. The articles

on optics, constituting one of the best appreciated of our departments, will be continued in the new form of publication, together with other matter helpful to opticians. Space will also be allotted from time to time to illustrated articles on general store subjects, furnishing useful hints on the conduct of business in the jewelry line. Appropriate humorous paragraphs will be forthcoming, and, in short, nothing will be omitted which can in any way add to the interest of a trade publication of the high character THE CIRCULAR has maintained and will consistently maintain in the future. Space fails to enumerate the many other projects the publishers are maturing to surprise and delight the readers of THE CIRCULAR. The trade has followed our course in the past, and can rest assured that the future will be worthy of that past There can be no higher aim, no higher praise. Hundreds have come to look upon THE CIRCULAR in its present form as a tried and familiar friend. These will find in the new the same sterling qualities that have won and held their esteem so long, while those who have not been regular recipients of our paper will surely see in the new and improved CIRCULAR many strong inducements to add their names to our list of patrons. We shall but change our costume, as it were, between the acts. Voice, manner, motive, all will be the same. And the audience? It will be the same old familiar one that has been so kindly disposed to us so long. Content yourselves, kind friends, while we retire and don the change.

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A VALUED subscriber whose letter is published on another page, has a suggestion to make that is worthy the attention of all graduate opticians. His idea is to form a post-graduate association of opticians from all parts of the country. This is surely a timely hint. The other professions, medical, dental, etc., have such organizations, and the benefits derived therefrom are of the most substantial character for all members. Papers on current questions are read, general discussion is had, the animosities and petty jealousies of trade are smoothed down, and the net result is a very decided elevation of the standard of attainment in these professions. There is no reason why the same benefits cannot be secured by the opticians if they will but follow our correspondent's advice. But while it may be necessary at the beginning to form a nucleus from among the graduates of one school, no limitation of membership should be made except for non-proficiency, and even then it would not be possible to go behind the diploma of any reputable school of optics. The society must be organized only on the broadest and most liberal basis,—mutual benefit and the improvement of the profession. THE CIRCULAR extends its thanks to the subscriber for his suggestion, and invites correspondence from others interested in the progress of the optical trade.

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THE holiday season being now over. every thrifty retail jeweler is engaged in cleaning up, taking stock and making good resolutions for the new year. As the editor is also engaged in brushing the cobwebs out of his conscience perhaps a suggestion or two given in a sympathetic spirit, will not be taken amiss. In the first place however inclined the retail jeweler may be to congratulate himself on immunity from the cracksman's toils,—he should remember that he may be the next victim—unless he is a member of the Jewelers' Security Alliance, and, if he is not, his first duty should be to become a member of this organization. Then, there is the subject of advertising demanding more and more attention from the live business man of to-day. Retail jewelers have as a class been neglectful of this branch of their business. A good lesson might be learned from the Washington jeweler who constructed a big watch on wheels and the other day drove through the streets of the city secreted within the timepiece, which meantime kept correct time and made his name for the nonce a household word. The ingenuity of the idea rather than the idea itself, is worthy of imitation. Novelty is the one thing needful in advertising. Another frequent mistake that ought to be guarded against is buying goods that are not adapted to local taste. It is quite as difficult to buy judiciously as it is to sell, and every jeweler should study the peculiarities of his trade, using care not to err on the other side however, and follow insteady of lead his customers. The natural tendency to relax exertion after the holiday season should be overcome by continued appeal to the public, attractive window displays and by a stock kept continually up to the standard. If the retailer starts out on the new year with everything ship-shape, with a definite and wise policy mapped out for the year, and with a subscription to the JEWELERS' CIRCULAR, we see no reason why 1891 should not be to him what it promises to be to all—A Happy New Year.

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OUR Cincinnati correspondent calls attention at the round up of the year to several trade-abuses about which the local manufacturers and jobbers are said to be complaining. Chief among these it is said is the habit on the part of some salemen of "running down" their competitors. This is so plain a violation of business principles that we are surprised the Cincinnati trade should dignify it by the term of trade-abuse. An "abuse" of this kind should surely be treated in the concrete, that is by the individual case. A salesman who attempts to do business in this way can only injure himself, the house that employs him and the entire trade. People whose remarks are chiefly confined to harsh and unfair criticism of others seldom inspire confidence themselves. We feel quite sure that this so called "abuse" cannot be very widespsead in Cincinnati. We have too good an opinion of the jewelry houses of that thriving western city as well as of their representatives.

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THE wily thief has had a hard time of it in New York this holiday season. The detective force detailed to the jewelry district has been more than doubled, and a strict watch has been kept on the well known crooks. These precautions are generally sufficient in the larger cities to prevent any great losses, but in the rural districts the jeweler has no such aid during the holiday rush. The crook driven out of the cities by the guardians of the law, hies him to the country, where there is a better field for his operations. The jeweler there must depend on his own vigilance and knowledge of "ways that are dark, and tricks that are vain, and—against safe-breaking—on a certificate of membership in the Jewelers' Security Alliance.

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THE advertising partner of the well-known house of Giles Bro., & Co., of Chicago, was recently credited by one of the Chicago dailies with the following wise words on advertising: "To advertise properly and effectively one must devote most of his time to it and not do it between jumps. I don't believe in programme and circular advertising, and newspaper advertisements are only beneficial to us during the season from September to January. Good trade journals and the weekly newspapers are better for our trade than the daily paper. A man buys a watch and diamond ring only once in a lifetime and there is no use in advertising to the public all the year round like dry-goods men do. Advertising, when judiciously done, is a sound business method. It "drums" up trade as much as a traveling man does." We entirely agree with Messrs. Giles, Bro, & Co., and feel sure their experience has been shared by others who as persistently and judiciously have utilized the trade journals. Advertising requires care and attention like every other department of business, but its returns are none the less sure if it is properly done.

Semi-Centennial of a Famous House.

IT WAS just after the death of President William H. Harrison on April 4th 1841, and the inauguration of John Tyler, that the house of Randel, Baremore & Billings which to-day holds the foremost position in its special line in the commercial world, was founded. A half century ago! When the country was only half its present age; when its western border seemed to be the Mississipi River, and the wonderful resourses of its almost boundless territory were scarcely thought of; when there were a half dozen railroads and no telegraph; when New York had just become the metropolis of the country, and its population was about 200,000; when the travelling salesmen for the few commercial houses went from town to town in a wagon, and disposed of the goods from their packs; when Maiden Lane, in many respects the most remarkable street in the country and the richest for its length next to Wall street, consisted of a heterogeneous collection of warehouses dealing in everything from a spool of thread to an anchor. Such was the nature of the time when there sprung into existence some of our most extensive business houses, among which that of Randel, Baremore & Billings occupy a high position. Of the present hundreds of jewelry houses the writer can only bring to mind two others that were in existence at that time: Wood & Hughes, and G. & S. Owen & Co.

Henry Randel having learned his their trade first with Palmer & Clapp and afterwards with Hayes & Palmer, which was a reorganization of the former house, (Mr. Hayes beingthe father of Henry Hayes, till recently of Wheeler, Parsons & Hayes, and now of the Brooklyn Watch Case Co.) started out in business with James Baremore who had learned his trade with John Rogers, underthe name of Randel & Baremore, in North Moore st., The establishment was a very limited affair, both partners working at the bench, with one or two boys to help them. They did general jewelry jobbing and made up some new goods. By 1845 their business had outrun their factory capacity and larger quarters were taken in Pearl st., north of Franklin Square. Increasing business necessitated a removal in 1847, to Reade st., and in 1850 to the Platt Building in Little Green st. now Liberty Place. About the year 1847 they decided to make the diamond business a specialty, and were the first house in America to do so. The present quarters at the corner of Maiden Lane and Nassau st. were taken thirty-nine years ago.

At that time, 1851, Chester Billings entered the employ of the house, and became a member in 1860, the firm name being changed to Randel, Baremore & Co. The pedestrians on Maiden Lane may still discern an old weather-beaten sign bearing this name which was placed on the roof at the time of the formation of this partnership In 1867, James Baremore, whom the older members of the trade recollect as a man of extreme integrity, sterling ability, and genialty, departed this life, the remaining partners Henry Randel and Chester Billings continuing under the old name until 1878, when the title of Randel, Baremore & Billings was adopted.

Though the house has a large and well equipped factory for the making of diamond mountings, and manufactures all the jewelry it sells, the bulk of its business is in paper goods, that is loose diamonds and precious stones. It was one of the pioneers of diamond cutting in America and its cutting and polishing department started ten years ago is now one of the largest in the country, turning out a fair proportion of the goods the house handles. In 1874 the London branch of the business at 1 St. Andrews St., Holborn Circus, was organized and has since proven an important factor in the success of the house.

Henry Randel who has for fifty years been at the helm of the business is still seen daily at the office superintending the manifold interests of the house and Chester Billings, the other surviving partner, is an able second. As both gentlemen are in the prime of health, we hope that the new century will still see them exerting the same genial influence upon all who are fortunate enough to come in contact with them.



MINNEAPOLIS, Minn., Dec. 18th, 1890.

"How is the holiday trade? More than we can do, and I haven't a minute to talk about it," quoth the energetic proprietor of a Nicollet Avenue retail establishment, as he hastened to bestow his polite attentions upon the thronging purchasers. From one, learn all. The varied and beautiful displays in all the jewelry shops are attracting the usual, and even larger numbers of customers throughout the city, and the recent financial disturbance in the east has had no noticeable effect upon the retail trade here.

With such staple products as flour and lumber, the farmer having a foreign as well as a domestic market, the mannfacturing interests of Minneapolis are never idle, and therefore she suffers less in times of stringency than a purely commercial city. The northwest as a whole has also many advantages at such times. It is generally felt that there is a degree of conservatism, industry, and enterprise which makes the people of the northwest more likely to pay promptly than those of other parts of the country.

Among the wholesale jewelry houses, business is good, but conservative. Here the disturbance in the New York money market appears to be more perceptible than in the retail trade. Country collections are very good, but those of the city a little slow. The volume of business is greater than last year, but the grade of goods somewhat lower.

Andrew Jackson, 115 W. Superior st., Duluth, is selling out his stock at a great reduction and offers his fixtures and the good will of the business at a reasonable figure.

At Duluth the other day, two pretty bracelets were noticed upon the arms of two pretty sisters. Some remark was made as to the beauty of the jewels. "Oh," said the younger sister, "mine is not nearly so handsome as my sisters. You see, this was made in Venice, while hers came from New York." Inspection revealed the fact that both the workmanship and material in that made here was of finer quality than in the case of the other. Those who are wise do not purchase such things abroad, unless in search of antiques and curios. Vastly greater skill, pains, and time are put into the creation of the best American jewelry, and this fact is acknowledged by all Europeans, except those interested in the other side of the question.

J. M. Donelson, Minneapolis, receiver of Samuel Lacs, the insolvent jeweler, is still before the public. In a case against Plegelman, Weller & Co., the jury recently brought in a verdict of $1,000 for the plaintiff.

Not long since, a writ of attachment was issued against the Warner Jewelry Company by J. G. Gjertsen, to recover $1,000 on an order of A. J. Warner, president. The accompanying affidavit states that the firm is about to conceal its stock for the purpose of defrauding its creditors. Mr. Warner claims that he owes Gjertsen nothing and that the order is a personal matter.

It remains for a young man teaching school in the country to carry off the palm in the matter of taking good care of his precious chronometer. He bought it last winter of a Northfield jeweler, and early Monday morning he called at the jeweler's store to have his watch wound and set. After this occurred repeatedly the salesman inquired if the watch did not keep correct time. The young man replied that it did, but that school closed on Friday night, and there was no use in wearing the watch out over Sunday, so he let it run down Friday and started it again Monday morning.

A travelling salesman of a New York jewelry firm caused some excitement in Dubuque, Ia., where he was arrested on the strength of a telegram from Rock Island, Ill., and is charged with abduction.

Mandan, N. D. is to have a large clock in the Post Office, if the

man soliciting ads of the business men of the town succeeds with his plan. The advertisements are painted on canvas and placed on rollers. The clock will keep correct time and change an advertisement every five minutes.

T. J. Lewis, Moorhead, Minn., has opened a jewelry store.

W. F. Doll, the well known wholesale jeweler, intends retiring from business at Winnipeg, and will be superseded by the Winnipeg Jewelry Co.

Obituary.

WASHINGTON BURR.

At four o'clock of the afternoon of December 11, the spirit of Washington Burr, of Carbondale, Pa., passed into eternity, and one of the pioneers of that city, and one of the oldest jewelers in the countrywas removed from our midst.

The deceased was of sturdy New England stock on both sides, and was born in Meredith, Delaware County, N. Y., on August 7, 1824. His youth was spent in that village in assisting his father, who was a practical surveyor, merchant and farmer, and in teaching school. From there he went to Ohio where for a few years he lived in the city of Dayton and town of Delaware, at the latter place learning the trade and business of jeweler, which he followed thereafter until his death. In 1848 he went to Carbondale where he had since continuously resided, and through the business which he established and carried on there, and his activity in public life, he became known to everybody.

Washington Burr was one of the men who laid the foundation upon which has been built the Carbondale of to-day. He was for several terms called upon by his constituents to represent them in various branches of the city government, and with marked ability and faithfulness he served on the board of school directors, board of poor directors, select council and common council. For some time he was also a member of the board of trustees of the First Presbyterian Church, was for a term treasurer of the Masonic blue lodge, a past eminent commander in the Knights Templar and an active Odd Fellow. He was well known and highly esteemed by the jewelry trade in New York for his gentle, courteous manners and strict integrity.

A widow, a daughter and two sons survive him, one of whom, Frank E. Burr, has for some time been the acting head of the business.

EDWARD FISHER.

Among the trade, especially among the older members, considerable regret was expressed when it was announced that Edward Fisher, of Fisher & Sons, had departed this life on December 8, at his home in Mount Vernon, N. Y. Death was due to paralysis induced by an internal complaint. He had been suffering for five years, but it was only a year ago that he relinquished business, leaving it in charge of the sons, Edward J. and James J. Fisher.

Deceased was born in Dublin on October 1, 1822. His father conducted a watch material business with a branch house in Manchester, England. This business seems to have been the medium of getting a livelihood in the Fisher family for generations, as not only the father of the deceased, but his grandfather and great-grandfather were dealers in watchmakers' and jewelers' supplies. Their ancestors were also perhaps the most extensive manufacturers of watch glasses in England at that day.

Edward Fisher learned the watch making trade with Alexander, the celebrated horologist. After finishing his trade he travelled over the British Isles in the interests of his father. About 1850 he succeeded to the business, which he continued till 1856, when the competition from the extensive importation of Swiss material becoming very stringent, he thought it to his interests to come to America and start a material house. He located at 69 Nassau street. During the long business career of thirty-four years he was continually, located, in one place or another, in the jewelry district. His last place was 63 Nassau street, but a few doors from the spot at which he first commenced business in this country.

He was a well-read man and capable of conversing on any topic. This power, with a natural joviality of disposition, made for him numerous friends. He was unostentatiously charitable, never letting his left hand know what his right did. Genial, generous and gentle he was the life of any assemblage in which he happened to be in, and his many customers were all personal friends. A widow, four sons and a daughter survive him. The funeral took place from St. Joseph's Church, 125th street and 9th avenue, New York, and the interment was at Calvary Cemetery.

AUGUST BECKER.

On the evening of Dec. 12, August Becker, senior member of the firm of Becker Brothers, lapidaries, Newark, N. J , met with a shocking death while returning to his home after a visit to the New York office. He arrived in Newark at 7.45 o'clock, and seeing an electric car on Market street, near the station, ran to board it on the north side. He thought the car was going west, but it started eastward and he was crushed between its side and one of the railway poles which are between the tracks in the center of the street. He fell to the ground, and when picked up was groaning but conscious. There were no cuts nor bruises on his head, face or hands, and he was not thought to be badly hurt. He was conveyed to St Michael's Hospital. On his arrival there, however, he was dead.

Mr. Becker was forty-nine years old, and leaves a widow and one child.

CHARLES H. SWORDS.

Charles H. Swords, Treasurer of the Jewelers' Mercantile Agency, 214 Broadway, met a sudden and tragic death early in the past month, his dead body being discovered on the 6th in Fleetwood Park, not far from his residence in Tremont, Westchester County.

Mr. Swords had been troubled with an ear complaint for many years, the result of scarlet fever, and a severe cold having aggravated the disease and affected the brain, it is supposed that while wandering about in a partially demented condition he stumbled into a ditch and was unable to extricate himself, partial paralysis setting in.

Charles H. Swords was born in New York City in 1836, his father being a prominent schoolmaster before the days of public schools. At the age of 13 young Swords left school to enter the employ of A. T. Stewart, the great dry goods merchant He made rapid progress and ultimately became confidential clerk. After 18 years' service under the ablest merchant of his time, Mr. Swords embarked in business in Wall street. Black Friday bore him under, however, and he never again engaged in the stock business. In 1880 he became connected with the Jewelers' Mercantile Agency, of which he was Treasurer at the time of his death.

He was a man of much more than ordinary intelligence, a lover of letters and the arts, of vast business experience, sterling integrity and judicial habit of mind. To know him was to respect him for his sterling qualities and broad and generous impulses.

THE fair and graceful damsels of the sunny south are now reported to wear enormous ox chain bracelets of silver on their wrists to signify that their hearts and hands are mortgaged, as it were. The suggestiveness of this galley-slave like token is still greater when iron is employed instead of silver or gold in its manufacture. One cannot but philosophize a bit over the strange fad. Who is it that needs this strong reminder of pre-emption? Is woman's fancy becoming so fickle she needs must bear about with her a burden such as this to keep her fiancée in mind? Or is the symbolism rather to be found in the sterner sex who would early accustom their fair partners to the wearing of the galling chain?

Our Trade Organizations.

THE JEWELERS' LEAGUE.

There were present at the monthly meeting of the Executive Committee held on Friday, December 5, Vice-President Greason, and Messrs. Howe, Jeannot, Jenks, Untermeyer, Houghton and Sexton. Three requests for change of beneficiary were granted, and the following seven persons were elected to membership:

Henry Becker, Providence, R. I., recommended by Geo. Dietz; Chas. G. Bloomer, Jr., Pawtuxet, R. I., recommended by F. D. Wilkinson; F. W. Bloomer, Pawtuxet, R. I., recommended by H. F. Payton; F. E. Draper, North Attleboro, Mass., recommended by J. E. Draper and F. E. Barrows; Lloyd Milnor, Chicago, Ill., recommended by E. Forman and O. C. Hansen; David N. Smith, Brooklyn, N. Y., recommended by Geo. H. Osborn and Geo. W. Smith; W. J. Walcott, North Attleboro, Mass., recommended by J. E. Draper and E. E. Barrows.

JEWELERS' SECURITY ALLIANCE.

THe regular monthly meeting of the Executive Committee was held at the Alliance Office, on Dec. 16th. There were present Vice-Pres. A. K. Sloan and Henry Hayes, ; J. B. Bowden, Chairman ; Chas. G. Lewis, Treas., Messrs. White, Kroeber, and Geo. H. Hodenpyl, Sec'y.

The following firms were admitted to membership :

S. Albro & Co., 80 Clifford st., Providence, R. I. ; R. Blackinton, & Co., 32 Chestnut st., No. Attleboro, Mass. ; Bates & Bacon, Railroad st., Attleboro, Mass. ; Wm. L. Ballou, 74 Chestnut st., Providence, R. I. ; E. Bertsch & Co., 146 No. 8th st., Philadelphia, Pa. ; Fred. W. Dexter, 220 Main st., Pawtucket, R. I. ; W. D. Fisher & Co., 8 Mill st, Attleboro Falls, Mass ; Fred. A. Fiedler, Front st., Milton, Pa.; Greenleaf & Crosby, 17 Alcazar st., St. Augustine, Fla.; Holden & Knox, 14 Page st., Providence, R. I. ; Healy Bros., East st., No. Attleboro, Mass. ; L. R. Hapgood, cor. Central and Liberty sts., Foxboro, Mass. ; Kent & Stanley, 7 Eddy st., Providence, R. I.; Nathaniel H. Jepson, 313 Main st., Washington, Ind. ; Lincoln & Ballou, Kendalls Block, Room 6, No. Attleboro, Mass. ; Lincoln, Bacon & Co., South st., Plainville, Mass. ; David E. Makepiece, Railroad st., Attlebro, Mass, ; Meiners & Schuette, 709 Eighth Ave., N. Y. City ; F. M. Nichols, 63 Main St., Taunton, Mass. ; Plainville Stock Co., cor. South & Bacon sts , Plainville, Mass. ; Stanton & Glover, 37 Hanover st., Boston, Mass. ; Isaac Sulzbacher, Dargan st., Florence, S. C. ; Tappan, Berry & Co., Attleboro, Mass. ; W. E. White & Co.. 54 Page st., Providence, R. I.

THE JEWELERS' AND TRADESMENS' COMPANY.

The following were admitted to membership last month : Merritt C. Case, and Arthur M. Case, of M. C. Case & Son, Jersey City, N. J. ; William H. Doles, Stamford, Conn. ; and from New York City, Peter G. Dubois, with E. A. Morrison & Son ; E. M. Butler, John W. Deveau, Walter Gardiner, James M. Hunt, Julius Koch and Isaac Milbank.

The increasing membership of the Company has necessitated the securing of an office at No. 198 Broadway, Dennison Building, room 17, New York. The superintendent and clerk, who have heretofore found accommodation on the premises of some of the officers, will hereafter be found at that place.

By a resolution of the executive committee on December 18th, the list of charter members was at that time closed, the first 1,000 members having been admitted without entrance fees.

NOTES.

At the regular monthly meeting of The New York Jewelers' Board of Trade held Thursday, Dec. 11th, the following firms were elected to membership : Robbins & Apppleton, Jas. W. Miller, (successor to Miller Bros. & Co.) Odenheimer & Zimmern, Henry Goll & Co., Veit Hirsch & Co., all of New York City.

The Chicago Jewelers' Association have engaged C. L. Richetts, a well-known and talented local artist to execute two fine memorials of the late Horace C. Wilcox, President of the Meriden Britannia Co.; one for the family, and the other for the Association's assembly rooms.

H. D. Sherrill, of Sinnock & Sherrill, 3 Maiden Lane, New York, on November 10, tendered his resignation as a director and member of the finance and banquet committees of the New York Jewelers' Board of Trade, on account of pressure of business engagements. The resignation was accepted at the next meeting, on December 11, by the Board of Directors, with much regret, as they appreciated the valuable services he had rendered the Board, as well as his hearty co-operation in measures that have been brought before them in the interests of the Association.

Useful Tool for Watchmakers.

O. W. Bullock & Co., Springfield, Mass., the largest manufacturers of watchmakers' and jewelers' tools in the United States, are mailing to the trade their new and enlarged illustrated catalogue of tools. It contains hundreds of cuts of all kinds of appliances and tools used in the various branches of the watchmaking and jewelry trade. Among their specialties therein presented may be mentioned a full assortment of Hirsch's patent tweezers, provided with a slot to hold the hands in fitting, so that the hand tongs are done away with; non-magnetic tweezers, invaluable for fine watch work, particularly in working over balances and hair springs of fine watches, and in handling escapements. Their line of tweezers which is very large and of the finest quality, includes some special combination tools, such as a patent case opener and tweezers, hand removing tweezers, hand or hair spring collet removers with knife edge, cutting tweezers fine tempered, for cutting small wire, pulling pins, removing hands; self-holding stonesetters' tweezers, and a great variety of diamond tweezers with both plain and knurled backs. In the line of watch keys they show a number of special interest, for example, a stem-winding key and case opener combined. In this same department we notice a combination steel marker and case opener, for marking prices on goods; a patent second hand and screw holder, a patent watch hand remover for removing tight hands, a wheel protector with asbestos discs, and a very handy little tool—Rose's patent wheel rise for holding watch wheels while putting in new teeth and for other kindred purposes. They are the sole owners and manufacturers of this tool as of Kay's patent roller remover, the most popular tool of its kind in the trade. Bullock's "X.C." composition case springs are too well known to need further comment here. As an example of the odd combinations devised by this firm may be mentioned a combined screw driver and tweezers with which a screw can be picked up and turned in without changing tools. The "Victor" screw driver of their manufacture, which is very neat and of fine finish and temper, is provided with different-colored heads to distinguish the size. Gold testing needles they make, of undisputed reliability, and, having recently added special and expensive machinery for the manufacture of ring mandrels, they are enabled to offer these and also ring gauges, of the same sizes as Allen's, absolutely perfect in every particular. Passing over a number of other tools, eminently worthy of mention, but not described for lack of space, we come upon Bullock's staking tool, a very fine set of tools at reasonable price, and Smith's patent staking tool, anvil and screw holder, for removing and putting on rollers and hair spring collets and for riveting in bushings. Goeggel's patent watch or closing hole punches, of which the firm is the sole owner and manufacturer, is also an indispensable adjunct to the watchmakers' outfit. Fales' patent case spring pliers are familiar to the trade. Bullock's pin vise have done away to a great extent with the imported articles in this market. In spectacle screw drivers they manufacture everything known to the trade. We have taken the space to mention thus specially some of the tools manufactured by A. W. Bullock & Co., to show the extent of their line, which is undoubtedly the largest in the country. Retailers who desire copies of this new catalogue can obtain them by sending four cents postage to Messrs. Bullock & Co., Springfield, Mass., and can then order of their jobbers according to their needs.

The Inventiveness of 1889.

THE field of inventiveness seems to be limitless; articles of utility which for years, yes, for centuries, have answered all requirements, have, to some minds, been considered faulty. The scythe, which has for an unremembered period been forgotten by radical minds, during 1889 received two would-be improvements according to law. The number of construction patents granted during 1889 was over 27,000. Of these almost 400 related to the jewelry, optical and watch trades, their branches and adjuncts, as may be seen from the following table:

Apparatus machines, etc	21
Boxes, cases, etc	13
Clocks	25
Clock devices, attachments, etc	30
Clock cases, frames, etc	5
Clock systems	2
Cutlery	27
Dials	6
Jewelry	56
Optical instruments, eye-glasses, spectacles, opera-glasses, etc	51
Precious stones	2
Processes (engraving, enameling, decorating, etc.)	20
Small wares	5
Tools	25
Timing apparatus	15
Watches	32
Watch attachments, springs, etc	32
Watch cases	6
Watch case attachments, etc	15
Total	383

Optical devices received a large part of attention from inventors, the improvements numbering fifty-one. Six patents on operaglass-holders, which have caused so much war among the optical companies, were granted. The watch still seems to be an incomplete mechanism, as thirty-two patents on watches primarily were granted. Clocks, too, which to most persons seem to be the acme of accuracy and convenience, still are apparently faulty, if we are to judge by the twenty five improvements and thirty attachments effected in that year. It is safe to say that of the 383 improvements above enumerated not one-quarter will ever prove remunerative to the inventors.

Of designs sixty-nine patents were granted during 1889, as follows:

Clocks, etc	4
Jewelry	19
Optical	2
Silverware	33
Small wares	7
Tools	1
Watches	3
Total	69

Of trade-marks thirty-two patents were granted, as follows:

Catalogues	1
Jewelry	4
Optical	4
Polishes	1
Precious stones	1
Silverware	2
Tools	1
Watches, watch cases, etc	18
Total	32

Missouri Onyx.

REGARDING the large quantities of onyx discovered in Crawford and Pulaski counties, Missouri, J. F. Leighton, president of the Providence Jewelry Co., St. Louis, said in an interview:

"I have just returned from a trip to Pulaski county, which I visited in company with twenty-two gentlemen for the purpose of investigating the deposits of onyx, and we were all surprised at the showing made. Onyx is really a marble colored with iron and other minerals held in solution by the water which percolates through the sedimentary deposit. For many years the world was dependent on Arabia for its supply of onyx and later quarries were discovered in Germany. This supply was also soon exhausted and the only source from which this beautiful stone could be drawn was Mexico. For many years Mexican onyx has been the only kind used in commerce, but reports from that country are to the effect that the quarries are giving out. It was therefore regarded as a great find when it was discovered that in Crawford and Pulaski counties, in this State, deposits that were practically unlimited existed. In both counties the onyx occurs in two ways, as vein onyx, and as stalagmites and stalactites. The existence of the Crawford county onyx has long been known, although its value was not appreciated until lately, but the Pulaski county discovery is a new thing. In the territory we own there three great caves are to be found, none of which have been at all thoroughly explored, but the latgest of which is known to be at least two miles long, while there is one vein deposit fully 20 feet thick and of unknown extent. The caves in Crawford county are not quite so large, but there is a vein measuring 14x32 feet, and at least 600 feet in extent. In quality the light onyx is fully equal to the average of that produced in Mexico, and we hope to find large deposits of the dark green; the light green we have already. The stones takes a high polish, and the amount is practically unlimited. Within a short time I expect to see Missouri take the first rank as an onyx producer."

New Forming Lathe.

THIS machine is designed for all manufacturing that involves turning a large number of pieces to a certain shape, and is particularly useful to manufacturers of silver plated ware for turning pepper, salt and mustard tops, tips for covers of hollow ware, etc. From 3,000 to 5,000, according to length, can be turned *ready to plate*, in ten hours, of casket handle tips, pepper and mustard tops. etc. *The turning is done by a single motion of one lever, and requires no skill on the part of the operator.* The first part of the motion of the lever tightens the chuck, and a further movement brings the forming tool forward under the work and turns it to shape, after which the tool drops sufficiently to clear the work during the reverse motion of the lever, which motion loosens the chuck and raises the tool at the proper time and in position for another cut. All operations are performed without stopping the lathe. The machine can be arranged without extra cost to take both roughing and finishing cuts. The advantages of this lathe are that it turns all pieces exactly uniform and perfectly smooth ready to plate, and requires no skill on the part of the operator. The machine is well built and substantial, and also of elegant appearance. One man and machine will save the room and time of eight men and machines on hand work. It is made by the Meriden Machine Tool Co., Meriden Conn.

D. F. BEEGLE, ALTOONA, PA.,

Is the possessor of one of the oldest clocks in America, and the only one of its kind in existence. It was made by Kleeman of Stuttgart, Germany, about 180 years ago for the sick room of a German general who was at that time ill. The clock is 9½ inches wide 11 inches high and 1½ inches deep, and is enclosed in a walnut wood frame with glass front. The dial is of parchment which acted as a screen for the lamp which was placed at the back, when the time-piece served as a night clock. At the top of the frame is the movement enclosed in an ornamental box. From this movement runs a vertical shaft to the dial. There is no seconds hand. The clock is wound and set by turning the box at the top, and is said to be an excellent timekeeper.

BRIEF HISTORY OF GOLD AND SILVERSMITHING.

HOLLOW WARES.—PART I.



MY OBJECT in this sketch is to give a very brief history of gold and silversmithing, from ancient times to our day. The almost unlimited scope of the subject, however, makes it desirable that I should confine myself, so far as possible to a special branch of it. I will therefore chiefly deal with hollow-wares, and, as I pass along, it is my intention to place before the reader illustrations of some of the best specimens of cups and vases, belonging to the principal periods of the art. Gold is generally believed to have been the first metal used by the artificer on account of its being the only one easily found in a pure state. The old tale about its discovery and the results of it runs thus: One day, as the prehistoric man was treading along a vale, he came across a glittering little lump lying on the ground among pebbles and apparently brought there by waters which had retired since. Irresistibly attracted, he picked it up and hung it on his body as an ornament. After a time curiosity prompted him to strike the nugget with his percutor (stone hammer without a handle), and he notice with surprise, that each blow leaves a mark on the lump instead of breaking it. Then he observes that repeated hammering stretches it and increases its surface, which is entirely different from what takes place when he treats wood and stone in the same manner. Hence flashes on his mind the notion of malleability, Suddenly, he remarks that the matter ceases to extend under his hammering, and has become extremely hard. But through directing his blows, intentionally or not, in a circular way from the outline to the center of the piece (this one resting on a soft ground) he has shaped it into a kind of vessel; and, full of pride, he makes up his mind, at once, to use it for his food. One day this gold tureen, being left too long on the fire, becomes red hot. When the heat has gone, the owner of the vase feels, in handling it, that the matter has become soft. He beats it again and sees it stretch as before, which brings to his mind the principal notions that man had to acquire before he could be a goldsmith.

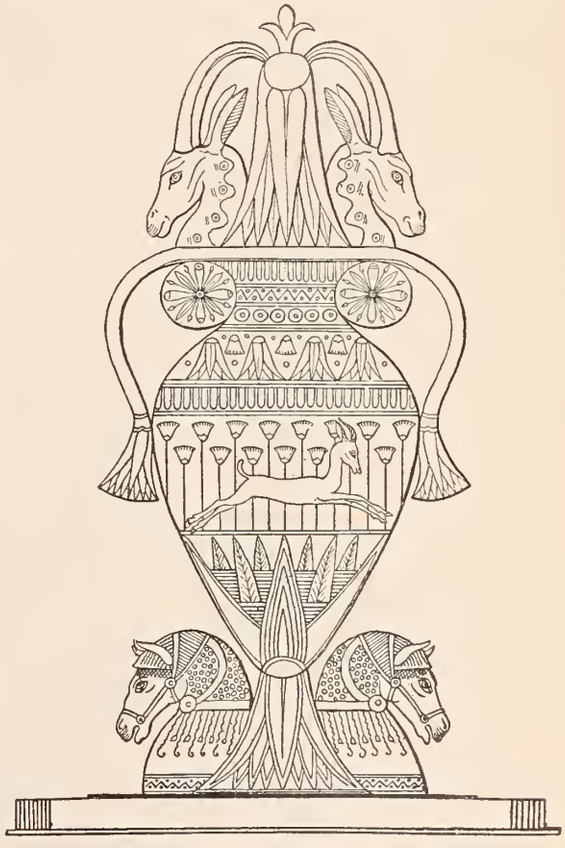
Now we must suppose that, on one occasion, two or more gold tureens, being left carelessly side by side on a well fed fire, happened to run into one another, and form a shapeless heap, and then we understand how our barbarian came to have the notion of melting.

The prehistoric goldsmith managed to do all his work with a stone anvil, a stone hammer, and a hatchet of the same substance which he used, either as a chisel to divide the metal, or as a puncher to adorn it with those striæ or arrangements thereof that we notice on all barbarian relics.

Many centuries, no doubt, elapsed before men discovered the various ores that being worked by them, yielded those metals, out of which no end of masterpieces have been made, although very few, alas! were preserved.

EGYPT.

All authorities on artistic matters have repeatedly declared that everything beautiful, lofty and superior in art was invented by the Greeks. Yet, if we examine the ancient works which archeologists have unearthed during the last twenty years, we see that great nations flourishing many years before historical Greece was in existence, produced interesting specimens in all branches of art. Ideas and customs, widely different from ours, caused those works to be fashioned in a way which may appear to us somewhat strange; but the remarkable workmanship and finish, in many of them, lead to the belief that their authors had a keen sense of artistic beauty, and possessed, besides all the notions, nearly all the practical means wanted to obtain a perfect rendering. Up to modern times, Indian, Chinese and Japanese styles have so slightly influenced European ones that I think it unnecessary to describe them in the present essay. Egypt, on the contrary, from the fact that Greece seems to have learnt a great deal from her, ought to receive our attention for a while. The vases and cups in gold and silver, which belonged to the Boulag Museum (recently transferred to Gizeh) and those on view at the Louvre, exhibit very graceful outlines, and are beautifully embossed and engraved. A great many that are figured on the various Egyptian monuments, even of very ancient periods, are still more elegant in shape and elaborate in design. Besides, we possess several proofs of the fact that every one of the processes which Greek goldsmiths of the best period used, and which make their handiwork more acceptable, no doubt, to our taste, was known in Egypt many centuries before Athens came to life. Even soldering was familiar to the workers of the precious metal who flourished at (Egyptian) Thebes, 1,700 years B. C. A scarabaeus which has been found in the tomb of queen Aah-Hotep, and now belongs to the Gizeh Museum, is adorned with gold legs fixed to the body by soldering in massive gold, the corselet and wings being covered with a pale blue vitreous substance. A ring, with the name of Touthmes III. which is at the Louvre, shows in some of its parts traces of the same process. Near this jewel there are several breast ornaments in *cloisonné* (one of them being a relic from Rameses II. period) in which the partitions joined with gold solder.



VASE OF GOLD AND ENAMEL. XX DYNASTY.

As regards the blowpipe, we see in Champollion's *Monuments de l'Egypte et de la Nubie*, three illustrations, reproduced from very ancient paintings, showing conclusively that the same apparatus, which our modern gold smiths have been using until quite recently, was known to the Egyptians seventeen centuries B. C. The blowpipe, as exhibited on one of these paintings, is simply a reed, but on the others it is represented

as a tube, provided at a short distance from the narrowing end with a swelling part to receive moisture which might interfere with the blowing.

The quantity of valuable wares possessed by the Pharaohs of the flourishing periods must have been enormous, if we consider that all the gold and silver exacted from defeated enemies, was melted and fashioned into all kinds of cups, vessels and jewels. A great many vases were made for religious purposes, and the king's palace was amply provided with handsome plate. Even in private houses could be seen numerous sets in the precious metals. Not only did Egyptians of the high caste possess elegant dishes, trays, ewers, cups, goblets and baskets covered with ornaments and figures beautifully finished off; but on special occasions, their tables were adorned with large flower vases in gold or silver. Among the most remarkable pieces may be mentioned a cup showing papyrus buds with their stalk turned into handles and a full blown papyrus shaping the foot, carried by two Asiatic slaves gorgeously clad, whose attitudes are well designed to give grace and harmony to the ensemble. Our fig. 1. shows a very curious vase, supposed to have been in enameled gold and made at the time of the XXth Dynasty, (the thirteenth century B. C.) It is a kind of elongated *hydrie* whose cover consists of a lotus flanked with two gazelle's heads. On thebody of the vase, we see several bands or zones, of various width, exhibiting different ornaments. We notice on one of them a startled antelope rapidly crossing a sort of marsh. Two busts of richly caparisoned horses lean against the foot of the vase. Many other specimens of gold and silverwares might be described most peculiarly adorned, some of them with handles in the shape of leopards, others elaborately decorated with scenes illustrating Egyptian victories; but this would carry us too far.



Fig 2.

If we study the documents and records concerning ancient Egypt and carefully examine the relics of Egyptian grandeur which have been preserved, we must soon be convinced that the artisans, who worked in that country about four thousand years ago, were really proficient in their art. In our line alone, Egyptian designers seem to have invented a wonderful variety of shapes for vases, cups and vessels of all kind. The conventional ornaments they devised, geometrical and others, are extremely numerous; and those introducing an imitation of native flowers, fruits and plants often give a beautiful effect and are always striking even if severe.

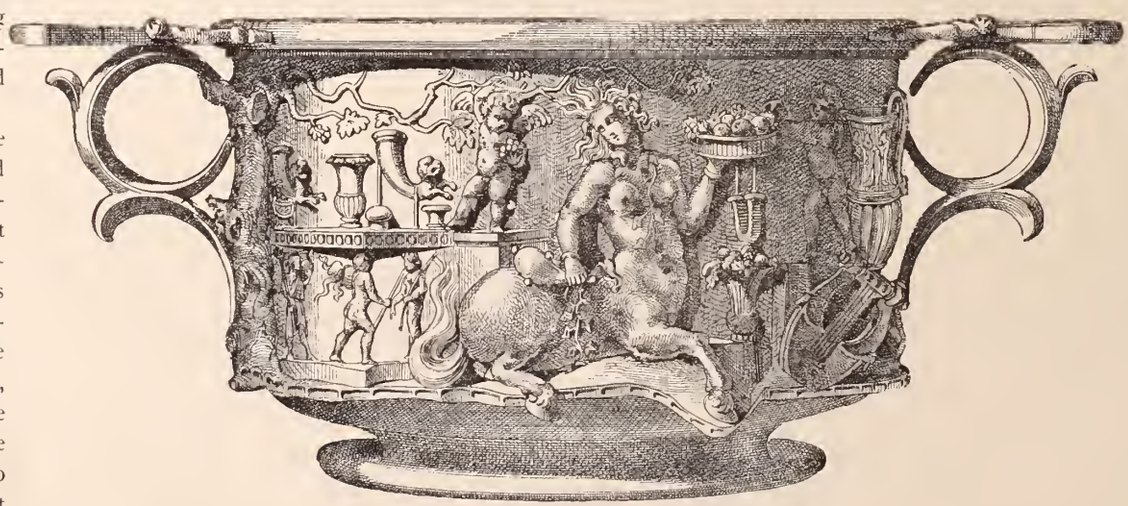


Fig. 3.

ASSYRIANS—HEBREWS.

Ancient historians speak very highly of the gold and silver plate possessed by the Assyrians kings; but as none of these pieces havebeen preserved, we cannot form an exact idea of their artistic beauty. The same can be said of the Hebrews. We have been taught to wonder at Solomon's enormous wealth and at the grandeur of his temple; but we cannot clearly picture to ourselves the outlines and decorations of the magnificent works in gold and silver, which are mentioned in the Bible Besides we have every reason to believe that they were not made by Hebrew artisans. At all events their style must have been but slightly different from the Egyptian orAssyrian.

GRECO-ROMAN PERIOD.

Dr. Schliemann's discoveries at Mycenæ in 1874, together with his statements as regards the jewels, vases, arms, masks etc., unearthed by him, have given rise to a great deal of discussion among men conversant with archeological matters. If we are to admit that the gold cups and vases, thus brought to light, really belonged to Agamemnon, we must acknowledge that the gold and silversmith's art was far inferior in those heroic times to what Homer's poems would lead us to believe. Yet these rough specimens are not wholly unworthy of attention. They show us that most artists of prehistoric Greece endeavored with their clumsy style, to study nature as they saw it. Besides conventional ornaments in the shape of rosacae, spirasl, circular embossments, etc., we remark on some of these pieces, copies of aquatic plants and coarse imitations of molluscs and zoophytes, among which poulps, medusae, asterias and nautili are predominant.

Even if we consider the rough ancient relics discovered at Mycenæ, as well as those of Hissarlik and Spaba, as works far anterior in date to the Trojan war, it would not help us in the belief that the

gallant Achilles did really possess the marvellous shiel described by Homer. It is almost impossible to admit that the author of the Iliad, who is said to have lived during the ninth century B. C. could have known all the particulars concerning that shield, since the son of Peleus had died at the siege of Troy, many centuries before. We may rather suppose that the poet's description is suggested by works made in his own time. There are in his description details which he could not invent, although his powerful imagination greatly embellishes what he describes. Evidently Homer saw some remarkable shields, which may have been brought to Greece by Phoenician merchants. The poet often mentions Cyprus and Sidon in connection with works of art. We see in the Iliad that Agamemnon's breast armour, as well as his car were presents from the king of Cyprus. In another passage we are told that the silver cratera or bowl offered by Achilles, as a prize for the games given on the occasion ofPatrocles' death, was the work of a Sidonian artist.

The following details are still more interesting for us. Homer says that the shield was divided into concentric zones, each one exhibiting a different scene worked in bas-relief, every division being colored differently. This was obtained by use of various metals : gold, silver, brass, iron and tin, besides several alloys.

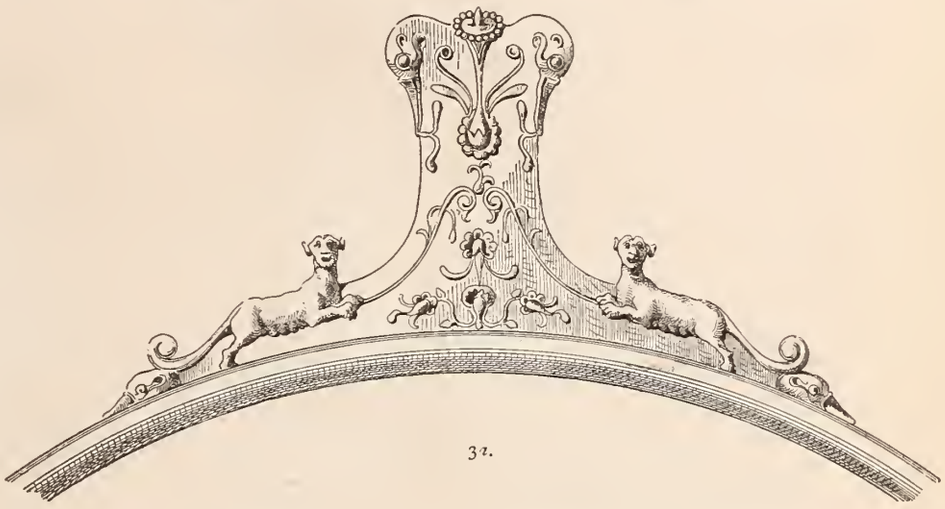
In the ninth century B. C. the melting apparatus was very simple. Two middle sized goat skins were placed on the ground and connected with the furnace with reed pipes. A man standing with one foot on each goat skin, weighed alternately on them, pulling up the empty one by the help of strings, fixed to it. Although we may suppose that the earthen crucible had already replaced the stone one, we have no information about it. On the other hand, we learn from a passage in the Iliad that silversmiths were provided with the following tools, all in brass : an anvil, hammers and pincers. Speaking of the latter, the poet says they were made with art, viz. well suited to their purpose. Now, it is perfectly evident that, even



Fig. 4.

when handled by a very skilful artist, tools in brass could not turn out a delicate and perfect relief work in silver, and still less in gold, unless we take it for granted that either of these metals was employed in a pure state, which would have made it unfit, on account of its softness, for use in the making of a weapon. This alone is sufficient to convince us that a Greek silversmith of the ninth century and a *fortiori* one of the thirteenth B. C., never made artistic work like that described by Homer.

Previous to the seventh century, B. C. that is before the time when Glaucos of Chio taught the Greeks the process of soldering, the different parts of all articles in metal were joined by rivets. In some cases two sheets of metal were fastened together by folding down



3/2.

the edges and interlocking them and then hammering them down one underneath the other.

For a considerable period, numerous Asiatic and Egyptian works in silver were frequently imported into Greece by Phoenician merchants. Greek artisans endeavored to reproduce them, and became by degrees more and more skilful in their craft. They soon however, grew tired of following the same tracks, for an artistic temperament of a decided character developed in them, under the influence of laws and customs entirely different from those of the people who had hitherto been their teachers.

In the fifth century B. C., the Hellenic art attained its very height with Phidias, and during that period, masterpieces were made out of all substances, Greek artists being then in full possession of all the processess, indispensable to produce perfect works. This is not the place to describe anew, the Chryselephantine statue of Minerva, which the famous sculptor made to adorn the Parthenon, at Athens.

I will also refrain from reproducing the descriptions of canthari, paterae, pocula, rhyton, cratera, patellae, calices etc., which fill up so many pages in Pausanias, Athenaeus and Pliny. Unfortunately, none of the pieces have been preserved and I must say that the numerous words of praise, bestowed on them by these eminent riters, do not atw all picture them before our eyes. I think it more to the point briefly to examine a few of the best cups and vases unearthed at Bernay, France, in 1830, and at Hildesheim, Germany, in 1868. All prominent writers on the origin of artistic relics of the past, agree in considering these pieces as Roman works of the Greek school; and from some inscriptions and weight marks (which for aught they know may have been engraved on one or two of them three hundred years after their real date,) declare that these pieces were all made between the first and third century of our era. It suffices for us to find in some of them an exact representation of what the best Greek works must have been.

Our fig. 2. reproduces one of the two silver oenochoes, on view at the National Library, Paris. This well-shaped vase is 30 centimeters high. It exhibits on one side a scene showing Achilles weep-ing over the slain Patrocles, and on the other side "the ransoming of Hector's body." On the neck of the vase we see Diomedes hol- ding the Palladium; and in front there is the following inscription "Mercurio Augusto 9. Domitius Tutus." The handles of the oenochoes, ending with Medusan heads are in massive silver, decorated with chased ornaments. The oval and pearls

round the top and the dents at the base of the neck, are also so to speak glypted out of the metal. Traces of the gilding are visible on the draperies and on some other parts.



FIG. 5.

Fig. 3 reproduces a drinking cantharus belonging to the same place, whose emblema it is useless to describe. The work, in various reliefs, is beautifully done. Fig. 3*a* shows all the details of the handles.

Figs. 4, 5, 6 and 7 are illustrations of pieces in silver repoussé found at Hildesheim, and now on view at the Berlin Museum. I thought it best to reproduce in fig. 4 only a fragment of the great patera, with the figure of Minerva in the center, so as to direct the reader's special attention to the *palmettes* andf oliage, in slight relief, decorating the wide rim. The workmanship of this piece is entirely exquisite. The goddess, seated on a rock, holds in her right hand a stick shaped at the top like a hook. The face and neck, as well as the background, preserve the color of silver, whereas the robe and the various ornaments have evidently been gilt. The thinness ofthe plate used to work out the emblema, is especially conspicuous in the folds of the robe, which give the exact effect of rumpled cloth. The handles are of a chaste and graceful style. This is a real Greek masterpiece, as is from a certain point of view the large cratera reproduced in fig. 5, although its character is entirely different. We see at the base two griffins breasting each other. From their outstretched wings start very fine curling ornaments, which, together with a rising foliage, cover the piece in a sparing and delicate manner. Here and there we notice some little imps darting with tridents at various fishes. No work, even of the best Renaissance period, can convey a more pleasing impression. Yet it must have been a vessel of frequent use. Its shape, as well as the plainness of its handles, put in the right place to answer the purpose of frequent use, combine to give us the idea of absolute fitness.

The drinking cantharus reproduced in fig. 6 exhibits most elegant outlines. This applies not only to the body of the piece and to the handles, but also to the stand, the curves and proportions of which are absolutely perfect.

In fig. 7 we have a very curious patera. In order that the central figure should appear as it really is, it was necessary to place the piece in a bent position. This portrait of infant Hercules, choking a snake with each hand, is in very high relief. It is almost an alto-relievo.

According to all records, cups and vases in gold seem to have been very rare in ancient Greece and Italy. There is a beautiful gold patera on view at the National Library, Paris, which was found at Rennes, Brittany, in 1777. The emblema, full of life, represents the famous drinking match between Hercules and Bacchus. It consists of eight human figures and a panther, and is surrounded by a frieze showing, in low relief, the triumph of the god of wine over his competitor, which includes twenty-nine figures and five animals—goats, elephants and panthers. The exterior rim is adorned with alternate garlands of acanthus and laurels, placed equi-distant from each other, and in which are set eighteen Roman gold medals (aurei) ranging from Hadrian to Geta.

The emblemata, viz., the figures and ornaments adorning gold and silver vessels, were obtained in repoussé work on very thin plates of metal. It was done in this way: the plate, being laid upon a yielding substratum (a kind of soft cement made of pitch and brick dust), was beaten with blunt punches of various forms into a connected series of hollows, roughly forming on the other side the intended design. Then the metal was taken up, turned over, and with the use of a *ciselet* and a small hammer, the artist shaped the rude relief into a neat and a well-finished decoration. The places where the metal had been overthinned by stretching were patched at the back with grains of a solder, which Pliny describes as being made of two parts of black and one of white lead (tin evidently). The plates so adorned were fixed on a plain massive vessel, through the rims being caught underneath the mouldings or secured by claws.



FIG. 6.

Gilding was done by the quicksilver process (this was still in general use until a few years ago). A leaf-gold being applied on the surface which had been rubbed with quicksilver, the piece was

exposed to heat and the fluid mercury evaporated.

Handles or appendages obtained by casting, were chased and then fixed on the vessel with tin solder.

Pliny tells us that the vogue for emblemata in repoussé was almost extinct in his time, on account of that kind of decoration being found too fragile. He says: "We now prefer chiselled work (anaglypta), in which the silver is cut away around the outlines of the design.

is especially in the jewelry line or in bronze works that they exhibited a thorough originality.

As a conclusion to the first part of this brief history, we must acknowledge that the Greeks invented an æsthetic that, up to this day, has been considered by European people as *the one*, and which no artist can help following to a very great extent if he means to produce a faultless work. The chief rules of it, as they appear to me, are clearness of design, harmony, fitness and chaste elegance.



Fig. 7.

Greeks seem to have known niello work and damaskeen as early as the days of Homer. They evidently saw some Asiatic works adorned in that way. The poet of the Iliad describes Agamemnon's breast plates as inlaid with ten outlines of dark azure, twelve of gold and twenty of tin. Egyptians were believed to have practiced the art of *niellatura* for a considerable time. In a rather obscure passage, Pliny says: "Egypt stains silver so as to see her adored Anubis upon the plate, and paints the metal instead of chasing it." The pigment is supposed to have been made by adding one-third by weight of the finest copper, and as much of sulphur, to some silver in filings. This mixture was roasted in a covered pot until the cover opened of itself.

A very low cup of the Hildesheim collection is surrounded by a garland of olive leaves, on which traces of green enamel are visible. The stalks were in brown enamel. This cup rests on three claws boldly chased. Although all the specimens I have described are supposed to be the work of artisans who lived at the time of the Cæsars, we may say that Roman art never existed, since all the pieces made by the Romans were copies of Greek productions. From the Etruscans, who were a very powerful nation when Rome was still in its infancy, many beautiful relics are preserved. But it

Nature was, in Greece, the great source of inspiration, yet all artists understood that they ought not servilely to copy it, but simply to take hints from the best models living and growing around them, and use these hints according to art's superior laws.

To Lubricate a watch.— The lubrication of a watch is a nice point; some oil a watch to death. It is always best to put a little oil in the center pinion hole before putting together, and on the barrel arbor; oil the mainspring by oiling a tissue paper and slipping it around the coils. Do not straighten the spring out in this process as it will be more apt to break after such a treatment. When properly oiled it is an improvement. If the oil is poor and too much of it is used it will soon gum up, and be worse than no oil. In regard to oiling the train pivots, a correspondent uses an oiler of his own invention, which is as follows: Get a good quill, take a sharp knife and split it like a steel pen; sharpen it down like a pen and stick its point into your oil cup, then oil your pivots. You can put on as little or as much as you please by the pressure, with no danger of cracking or scratching anything. Then put on the balance and bridge, see that everything is screwed down firmly and that the balance has a good free swing. Never oil the lever pallets or ruby pin; they will soon get gummy and spoil the whole job.

Fashions in Jewelry

A Lady's Rambles Among the Jewelers.

AMONG the more popular of miscellaneous objects worn are pins for the hair. Two-pronged tortoise shell pins with gold tops are favorites. Newer than these are pins with gold prongs of spiral shape. These when thrust in the coiffure show gleams of yellow here and there.

*** *** ***

THE newest buckles are long and curved so as to accommodate themselves to the figure.

*** *** ***

MANY of the new portmonnaies and card cases are embellished with silver and gold ornamentations in the way of little flowers, insects and fancy scrolls, in place of the old time monogram.

*** *** ***

PURSES of chain gold or silver are decidedly fashionable. A quite new pattern seen, an imported novelty by the way, was finished at the top with an expanding lattice frame, which, when closed, was surmounted by a solid silver cover.

*** *** ***

AN attractive brooch, which may also be worn as a pendant, simulates an octopus, the body of which is formed of a large gem, and the tentacles of gold and platina.

*** *** ***

A PRESENT sure to be acceptable on any occasion is a cup and saucer of some choice ware, with a silver spoon thrust through the handle.

*** *** ***

OPALS set in diamonds furnish a favorite combination.

*** *** ***

THE brilliant butterfly composed of diamonds and filigree gold is just as fashionable as ever.

*** *** ***

ANTIQUE designs are much copied in both gold and silver hair pins.

*** *** ***

A PASSING fancy consists of engagement bracelets modelled after an ox chain, and fastened with the usual padlock.

*** *** ***

THE heart-shaped jewelry is increasing rather than diminishing in favor.

*** *** ***

A DAINTY vest chain that will please young ladies is about seven inches long, and is made up of gold links enamelled in delicate tints and with pearls set between them, about an inch apart.

*** *** ***

GENTLEMEN'S vest buttons come in sets of four, and may be either in plain, chased or enamelled gold or set with gems. Sets made to order sometimes bear the monogram of the wearer, or, if he chances to be one of the "four hundred," may show a crest instead.

*** *** ***

PUZZLE rings in both sterling silver and gold continue to please.

GOLD beads appear in plain, Roman, polished and vermicelli finish.

*** *** ***

ROSARIES and crucifixes combined and separate are made of both gold and sterling silver; these found a good trade during the holidays.

*** *** ***

CLUSTER rings, all diamonds or with a sapphire or opal in the center, divide favor with the marquise rings.

*** *** ***

THE fleur-de-lis remains a popular design in both gold and silver jewelry.

*** *** ***

SILVER knitting needles, accompanied with a silver bar on which to wind the yarn, are new.

*** *** ***

A NOTELTY in watch cases is finished with Spanish decorations which consists of a black steel ground inlaid with gold. Other cases are of enamelled steel.

*** *** ***

AMONG conveniences provided for men by the silversmiths, are little boxes for holding elevated railroad tickets.

*** *** ***

SMALL silver clocks are the preferred sort for ladies' boudoirs.

*** *** ***

YOUNG women seem fond of wearing turquoises and moonstones, especially when these are set in heart shape and framed with brilliants.

*** *** ***

A NOVELTY that pleases is a tiny castor containing an individual salt, pepper and butter dish in silver.

*** *** ***

SILVER mounted emeries are one of the many conveniences provided for a lady's work box.

*** *** ***

HEART-SHAPED pins and rings, with a turquoise surrounded by pearls or diamonds have many admirers.

*** *** ***

LONG watch chains that go around the neck have appeared in limited numbers for both eye-glasses and watches. The revival of this old-fashioned article started in Paris.

*** *** ***

SILVER cord twisted to form large initials is the form some quaint letter clips take.

*** *** ***

SOME very artistic little brooches especially intended for heightening the charms of the tea gown, are in pierced gold framed with small gems.

*** *** ***

THE four-leafed clover is always a taking design, and one of the prettiest variations of it shows several diamonds dotted around the edges like drops of dew.

*** *** ***

WATCHES are set in some cane and umbrella handles.

*** *** ***

A UNIQUE piece of jewelry is a chatelaine watch, the enamelled case of which represents a large beetle.

An attractive jewel case comes in the shape of a Sedan chair, and is covered sometimes with silk brocade, sometimes with leather and occasionally with plush.

*** *** ***

Shell hair pins and combs, the gold tops of which represent bow knots, loops and ends of ribbons, are both new and effective in appearance.

*** *** ***

Slender chain necklaces of gold and platinum are fashionably worn, with a single large stone set as a pendant.

*** *** ***

Diamonds for the ears are worn either as solitaires, pendants or as ear screws.

*** *** ***

Men about town are affecting rings of dark red gold, in the chased top of which are incrusted cat's-eyes, sapphires or other stones.

*** *** ***

Tape measures in silver cases find favor with both sexes.

*** *** ***

An English novelty is the expanding watch bracelet which adjusts itself to the shape and size of any wrist, thus holding the watch securely in its proper position; there is no clasp or fastening which becoming insecure is likely to result in the loss of the bracelet.

*** *** ***

An elegant trinket appreciated by both sexes is a pocket mirror in frosted gold or silver.

*** *** ***

A dainty luxury in the way of vinaigrettes is one in cylindrical form with a cabochon top in polished cat's-eye or other stone.

*** *** ***

What are known as Cleopatra trinkets have appeared in the way of bracelets, necklaces and brooches. These are in Egyptian designs, such as lotus leaves, sphinxes and serpent's heads.

*** *** ***

It is difficult to say which is the more popular, turquoises or moonstones.

*** *** ***

Thumb rings, an old custom revived, are out in serpent shape with ruby heads.

*** *** ***

Very young ladies remain devoted to gold and silver bead necklaces.

*** *** ***

Crops with silver handles are now accompanied by silver spurs that match in decoration for horsemen.

*** *** ***

A Cincinnati jeweler is held accountable for an enamelled silver liquor flask that simulates a sugar-cured ham.

*** *** ***

Unique among toilet trays in silver is one representing a wide, shallow basket, with a kitten or pug dog clambering up one side.

*** *** ***

A berry formed of colored gems makes a pretty pendant for a queen chain.

*** *** ***

A unique dinner favor is a seal with the cipher of the guest who receives it carefully cut upon it.

Slender fillets of gold or silver are much worn by young ladies. Elaborate tiaras enriched with gems are affected by matrons.

*** *** ***

The new pocketbook and card case combination is nearly square, and is made of morocco or other fashionable leather with silver trimmings.

*** *** ***

For school girls there are watches of silver that are suspended from pretty little silver chatelaines.

*** *** ***

Finger rings are one of the fads in jewelry now, and are much worn by both sexes.

*** *** ***

Serpent rings with ruby eyes, also bracelets in the form of serpents have come to the fore again. This may or may not be due to Sarah Bernhardt's introduction of serpents natural and serpents that are masterpieces of the goldsmith's art in her personification of Cleopatra.

Art, Glass, Bric-a-Brac and China.

Cut glass table bells with silver tongues are the correct thing.

*** *** ***

Tall cylinder-shaped vases in plain cut glass are effectively decorated with heavy bands of solid gilt.

*** *** ***

Salad forks and spoons show a variety of handles, some being of decorated china and others of glass.

*** *** ***

Low glass bowls in fluted pattern with ornament of foliage designs in fine gilt lines are daintily pretty.

*** *** ***

Dessert plates of white china, with painted portrait centers and perforated borders, represent a popular article.

*** *** ***

Anglomaniacs delight in porridge sets of Coalport china, this being a ware which appears on the table of her majesty of England.

*** *** ***

Rookwood pottery is out in grotesque and Japanese designs.

*** *** ***

Sevres porcelains are the delight of every woman who knows anything about ceramics, and just now they are immensely popular, being in harmony with the light furniture so fashionable in modern drawing rooms.

*** *** ***

Dresden china candelabra, which found a large trade during the holiday season, are preferred to lamps in some homes.

*** *** ***

Cut glass candelabra afford a pleasing change from the more massive silver affairs. Crystal lamps with shades simulating an open parasol are attractive affairs. Numbered with novelties among cut glass lamps are those supported on a slender stem, with a silk shade fringed and otherwise fashioned so as to represent a chrysanthemum.

*** *** ***

Statuettes in Dresden porcelain are in demand for cabinets in drawing rooms.

*** *** ***

Cut glass candelabra, also single candelsticks, are a pleasing addition to a dressing table. The newest ones are finished with silver sockets for holding the candles.

For those who prefer it, there are wine glasses, decanters, finger bowls, etc., in Venetian glass.

***

For serving asparagus the silversmith has provided not only asparagus racks and dishes, but tongs, servers and forks. Asparagus tongs of recent introduction are formed with one wide side which is designed to slip under the vegetable, and one narrower side that, folding over, holds the asparagus in place.

***

Handles of Dresden ware have appeared on some of the new umbrellas for women.

***

Decorated fruit plates with open work borders find many admirers.

***

Bouillon, punch and chocolate cups in decorated china bear the portraits of celebrities, and thereby afford topics for conversation.

***

Brass tea tables have made their appearance at five o'clock teas.

***

Piano lamps with brass mounted vases and silk umbrella shades are as fashionable as ever; so are the fine cut glass, porcelain and faience bouquet lamps in brass and gilt mountings.

***

One may gratify their taste with table glass, cut, plain, engraved, gilded or enameled, and still be in fashion.

***

Leather mounted calendars for 1891 rest on silver easels, and have a tiny clock in one corner.

***

Thermometers have this season found queer resting places; some are mounted on silk covered banjos; some appear from out the recesses of a sheaf of wheat, while others are set in the center of an enameled violin.

***

Some of the more costly bonbon boxes are of stained ivory, with a miniature framed in semi-precious stones on the cover.

***

Very handsome are the bonbon boxes of Capodi Monte, with figures in relief covering the top.

***

In pleasing contrast with the high standing piano lamps are small lamps, the cut glass globe of which sets in a silver standard shaped like a candlestick.

***

Candelsticks are in more or less request for bed rooms; many of these are of low form, having their trays shaped in imitation of a diamond, a club, a heart or a leaf.

***

Royal Dresden bric-a-brac is an appropriate accessory for parlors and boudoirs furnished in delicate tints of blue or rose color.

***

A taking little china plaque has for its central decoration a facsimile of the photograph of a child playing with a dog, the photograph resting upon a background of sprays of wild roses.

***

Pretty trays of various sizes and designed for pens, pins and other small objects, are this season out in decorated china and cut glass, the shapes being much the same as those occurring in silver.

***

Decorative egg baskets in china, holding four to six cups each, are an ornamental convenience for the table.

***

Decorated china celery trays compete with cut glass ones for favor this season.

***

A unique menu stand simulates in enamelled metal a pack of playing cards through which is thrust a large silver fork, the handle of which forms a support at the back. Elsie Bee.

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Mechanical Ocular Defects.

Their Nature, Cause, Correction and Relations to Functional Nervous Diseases.

Edited by C. A. Bucklin, A. M., M. D., New York.

[The aim of the author is to produce a clear and thoroughly practical course of instruction on the subject of "mechanical ocular defects," which is entirely void of useless technicalities and within the easy comprehension of every thinking student without his having had any previous technical or mathematical education.]

ANISOMETROPIA.

We indicate by this term that the refractive condition of the two eyes is unequal. Slight differences between the two eyes are much more frequently found than absolute equality. Triffling differences, however, occasion no trouble, and are hardly worthy of consideration under the long list of annoyances experienced by those who really suffer from this defect. Landolt states that "Anisometropia exists when different spectacle glasses are required by each eye to develop its maximum visual acuteness, or in order to present to the observer the same clearness in their ophthalmoscopic images two different numbers of lenses are required." The first part of this sentence is true, but my readers will see at once that the statement regarding the different lenses in the ophthalmoscope is faulty. One eye may be normal while the other eye may have any degree of hyperopia which the observer can overcome by his accommodation. Consequently the observer sees both ophthalmoscopic pictures distinctly without any glass, notwithstanding considerable inequality exists between the refraction of the two eyes.

All combinations of refraction are, however, possible between the two eyes. One may be emmetropic, while any possible combination of refractive errors may exist in the other eye. These differences between the refraction are frequently of very high degree. For example, a lens may be luxated or extracted in one eye which would give a hyperopia of about one-third, while the other eye may be found to be equally myopic.

Different degrees and kinds of astigmatism existing in different eyes are a very common cause of anisometropia.

The majority of cases of anisometropia are congenital. It will be frequently found that this defect is also associated with unequal development of the two sides of the cranium.

The underlying causes for unequal development of the two eyes have never been fully established. Weak vision existing, anisometropia exists only when there is an attempt to practice bi-nocular vision. One eye becomes severely fatigued in attempting to overcome more difficulties than the fellow eye. This fatigue of the faulty eye is also experienced by the better eye.

Vision in this class of persons is practiced in three ways:

First—*Both eyes fix and bi nocular vision exists.*

Second—They are used alternately and bi-nocular vision usually does not exist, or may be practiced or suppressed at the will of the individual.

Third—*One eye fixes while the other is always excluded.*

In the first instance where bi-nocular vision is practiced, asthenopia is always a very annoying symptom. In the second instance there is either no asthenopia or it is periodic, appearing when bi-nocular vision is attempted and disappearing as soon as all attempts to use bi-nocular vision are abandoned. In the third instance asthenopia never exists as a result of the anisometropia; when found it is due to some local cause in the fixing eye.

It is desirable to determine to which one of these three classes a given case belongs. It therefore becomes necessary to determine whether the individual fixes bi-nocularly. This end is accomplished in one of the following ways:

First—If during the act of fixation one eye is covered, the other eye makes a movement to fix, it is probable that the individual fixes with one eye only.

SECOND—If a prism is placed suddenly before one eye apex in or out, this eye will make a movement toward the apex of the prism.

In anisometropia the vision in one eye is frequently so bad that that the existence of binocular vision has been greatly doubted, notwithstanding bi-nocular fixation existed. In this class of cases the proof that stereoscopic vision exists is best proved by Herring's experiment, commonly called "the falling test." The individual looks through a horizontal slit in a diaphragm long enough to accommodate both eyes; this diaphragm is on the end of a tube fifteen inches long. The attention of the individual is then directed through this instrument to a small distant object in the median line. Small balls are then dropped from above before and behind the observed object. The individual having bi-nocular vision can decide whether these balls fall in front of or behind the observed, while the individual not having stereoscopic vision cannot decide this question.

Persons having sufficiently acute vision to read with both eyes can decide the question of bi-nocular vision in a much more simple manner, as the following experiment illustrates: Place a pencil in the line of vision of one eye, and direct the person to read at twelve inches. The pencil will cut two words out of the line when the eye before the visual axis of which it stands is used alone. Consequently, if the person sees with only one eye at a time, he will make a break of two words in every line. If he see with both eyes the words which the pencil cover from the sight of one eye will be seen by the other eye, the visual axis of which is directed to one side of the pencil.

It is very rare for a person having PERFECT bi-nocular fixation not to have stereoscopic vision; consequently, the above tests for bi-nocular fixation are the only ones generally used in practice.

The class of anisometropes who are myopic in one eye and emmetropic or hyperopic in the other, usually change the vision from one eye to the other, as the change in distance makes this change of vision neccessary. This class of persons usually read with one eye, and use the other for distant vision. They frequently become alarmed and seek aid from glasses, because, from purely intellectual reasons, they fear that they will injure one eye by doing all their near work with it. All attempts to correct the *anisometropia* in this class of cases will be failures. The correction of either eye for the special distances for which the individual desires to use it will be gratefully received. These are the individuals who could always see as far as any of their friends, and still went to the age of 60 without using glasses for reading.

TREATMENT OF ANISOMETROPIA.

The treatment of this defect is one of the most annoying stumbling blocks to all students in this special line. It is our duty to examine each, and determine if we can give them a separate correction which will be agreeable and advantageous to use. It would seem that a person having a slight myopia in one, and hyperopia in the other, should accept a correction which would reduce their eyes to the physiological state of normal refraction. As a rule, however, such is not the case. They acknowledge that they see better with the glasses, but the glasses will tire them severely, and they never will be able to use them.

There are very many cases of anisometropia, in which the person can not tolerate the slightest disturbance of the relations which always have existed between his two eyes. It occasionally happens in persons having hyperopia in one eye and myopia in the other that we obtain more satisfactory results by correcting the myopic eye for distance and the hyperopic eye for reading. Such cases are very rare, and must be due to some special cause.

More frequently, where from some irregular refraction or corneal obscurity, the hyperopic eye can not be used for a distance, the patient will prefer the concave glasses for the distance, and will read with the same eye by removing his glass. Other cases are reported, where attempts to equalize the two eyes more nearly by correcting part of the myopia in one eye and part of the hyperopia in the other. This may be tried, but I have never had any success with this method. There is little difficulty in correcting astigmatism of widely differing degrees in the two eyes.

Presbyopia can frequently be corrected with satisfaction to the patients, when it exists in the two eyes in different degrees.

Some cases of anisometropia call for a full correction of the defect. Some find a partial correction of the defect agreeable, while others absolutely refuse to accept the slightest correction. My practice is not to correct these cases, unless I can thoroughly demonstrate that the patient does much better with my correction than without. From this stand I have found very few cases where any attempt to equalize the vision of the two eyes was beneficial.

In cases of anisometropia who apply because they have accidentally discovered that they do not see alike with each eye, or where they complain of asthenopia, there can be no fixed rule for their correction. A practical test of each case is the only manner of answering the question. The remark of Landolt about the development of strabismus in anisometropia is in keeping with his chapter on the etiology of convergent squint, very much out of line. An anisometropie would only learn to develop active convergent squint when he constantiy fixes with one eye, and this eye is hyperopic to such an extent that he cannot overcome the hyperopia without squinting.

Landolt states, "That, if a person is obliged, for any other reason than that of being anisometropic, to wear spectacles, there is most always an advantage in equalizing the refraction of his two eyes, *as much as he finds it agreeable.*" This statement, with the last qualifying sentence, may be so. In my experience, which is much less than that of the above author, I have not found any attempt to equalize the two eyes agreeable to the patient. He has done better with a separate correction for reading or distance, or he has done better without any correction.

CORRESPONDENCE.

Morristown, Pa., Dec. 1st, 1890.

DR. C A. BUCKLIN:

Will you kindly give some explanation of the following case: A boy, age 16, complains of severe headache when exposed to the light—can't read long without his eyes becoming dimmed.

$V=\frac{6}{9}$ one-half. With $\begin{matrix}\text{R. plus } 2.00 \text{ D. cyl. ax. } 10\\ \text{L. plus } 2.00 \text{ D. cyl. ax. } 165\end{matrix}$ C. V.$=\frac{6}{6}$,

mostly, and is the best obtainable vision. Now, with the axis of cyls., as above, he states that the bottom of the test card appears narrower than at the top. By placing the axes of the cyls. horizontal the card will appear square, but by so doing his acuteness of vision is greatly diminished, and, therefore, he prefers the axes in the position as first given. I varied the plane and height of lenses, as well as the pupillary distance, but could not make the card appear square to him. I, therefore gave him the cyls., with the axes as first stated.

I would be pleased to see the explanation for this, to me, unaccountable condition. Truly yours, C. Y. LINDER.

This question is an old one, and has been asked many times through this journal. I never have found cylindrical glasses satisfactory when they distorted rectangular surfaces out of true.

The most common cause of the defect is the slight paresis of the superior oblique muscle of one eye; this allows the eye to rotate slightly, so that the axis of the astigmatism does not correspond with the axis of the cylindrical lens. The effect may be observed by placing a concave and convex cylinder of the same number with their axes corresponding; now, if one be allowed to rotate slightly on the others, the distortion of square objects will be observed. It may also be due to a certain form of irregular astigmatism which complicates a certain case of regular astigmatism.

The difficulties of overcoming the annoying symptoms are very great. Sometimes a slight change in the number of the glass or its axis will obviate the defect. Sometimes it cannot be overcome without entirely discarding the cylindrical correction of one eye. In other cases the annoyance experienced is so much greater than the benefit derived from the cylindrical lenses that the individual prefers to dispense with the cylinders entirely. The reduction of the acuteness of vision in one eye amounts to nothing if you can correct these annoying asthenopic sensations.

The next class in Optics will commence on January 10th.



Proceedings of the Watchmakers' and Jewelers' Union.

[NOTICE.—We shall be pleased to receive and discuss descriptions of new tools, attachments and improvements in any branch of our trade, and publish them free of charge; also inquiries for those desiring information on any point of general interest. Communications should be written as concisely as possible consistently with clearness, on only one side of the paper, and be received here by the 10th day of the month, in order to be discussed at our meeting for that month and inserted in the next issue of THE CIRCULAR. Address them to "Secretary of the W. & J. U., care of THE JEWELERS' CIRCULAR, 189 Broadway, New York." For full information for correspondents, see our Proceedings in THE CIRCULAR for October, 1889.]

Fifteenth Meeting.—Reported by the Secretary.

The attendance at this meeting was quite large, and an interesting discussion was had upon subjects of practical value to the trade generally. The first letter read was upon the subject of

CHANGING THE RATE OF ADJUSTED WATCHES.

Secretary of the W. & J. U.:

Easton, Pa., December 1, 1890.

While visiting a jewelry establishment in a neighboring city the other day, I saw the watchmaker do something which I thought was very much out of order. A customer brought in a chronometer watch and compared it with the regulator. It was losing a little, and the watchmaker put his screw driver against the hair spring, close up to the stud, and bent it a little towards the balance staff. He said that the pressure of the spring against the staff would make the watch run faster. Was that the proper thing to do? It don't seem so to me. R. R. B.

MR. HOROLOGER declared most emphatically that the performance described by Mr. B. was not only improper, but it proved that that watchmaker was unfit to handle a good watch. In all watches pressure of the hairspring against the balance staff is to be avoided, and one of the principal objects of the terminal curve on the spring of a chronometer is to cause the spring to expand and contract during its vibrations *without* exerting any side pressure against the balance staff. Pains are taken to shape and pin the hair spring so as to let the pivots stand free in their jewel holes at all times. If the chronometer was in good order when brought in, this workman damaged it by his bungling.

The proper course would have been to alter the quarter-screws in the rim of the balance. There is one at each end of the center bar, and another in the rim midway between these two, on each side or segment of the rim. The latter pair should never be altered except by a workman who knows thoroughly what he is doing, for moving them will change the compensation for temperature as well as the rate. The screws at the ends of the center bar can be turned in or out a little—in this case they should come out—to change the rate. They must be turned exactly the same amount, or else the balance will be thrown out of poise, which would affect the adjustments for isochronism and positions. Suppose one screw to be turned out a little further than the others; then it will be further from the center and that side of the balance will be heavier than the other. Suppose that side to be down when the watch is hung up or in the pocket. Now, if the balance vibrates just one turn, this overplus or extra weight has to be lifted from the bottom position to the top on each side, retarding the motion of the balance. When the balance makes its return vibration, this weight accelerates the motion downward, then retards it when going up on the other side. Now, suppose the balance to have a little larger vibration, say, 1¼ turns, an increase of ⅛ on each side. When the weight reaches the top, goes over and down a little on the other side, it carries the balance a little further down than it would have gone without it. On the return trip it retards the balance till it reaches the top, then accelerates it while going down till the bottom is reached, and finally retards it while going up on the other side and again accelerates it from the top downward. So in every swing of the balance it is first retarded, then accelerated, again retarded and again accelerated. The balance, instead of being a constant mass to be controlled by the hair spring according to the regular increase and decrease of its tension, is practically a constantly changing mass. And what is still worse, its changes are different when the vibration increases or decreases from 1 turn to 1¼ turns, or any other magnitude. The error produced in each vibration may be small, but when repeated, say, 18,000 times every hour, it soon becomes one that is very annoying.

DULL LOOKING WATCH CASES.

Cairo, Ill., August 27, 1890.

Secretary of the W. & J. U.:

SIR—I notice that after I clean a watch and hang it up to regulate, the casy soon gets dull and dingy, and does not look as if it had been cleaned at all. Thee hang in the window, and I would like to have them look nice. I think I clean them well. What is the matter with them? JEWELER.

MR. BENCHMAN said that the trouble might be in the cleaning of the cases not being thoroughly done, or they might be handled too much after cleaning. When cleaning and polishing a case wash it thoroughly with soap and water, warm, to which has been added a few drops of ammonia, enough to make the water smell. Dry in sawdust, and handle as little as possible afterwards. The moisture from the fingers is greasy and does not dry, but draws moisture from the air, so that the cases will actually feel sticky on a damp day. In a town where the air is always moist this trouble is very common Then some watchmakers rub them off with a chamois skin that has been used for years and never washed. As they pack their watches over night in such a skin, which is damp from sweaty fingers. If our friend will wash the cases as described, avoid handling them with the bare hands, and pack them only in clean, dry skins or cloths, his cases will stay bright.

BRASS CLOCK DIAL.

Philadelphia, Pa., Dec. 6, 1890,

Secretary of the W. & J. U.:

A brass dial for an old English clock is to be polished, lacquered and figures filled in. Please give accurate information as to materials used and how to proceed. Would you fill in figures first or lacquer? J. W. WARNHOLM.

MR. MCFUZEE said that the dial should first be cleaned out and brightened, leaving the final polish till after the figures are filled in. The polishing is best done by taking a wooden block about two by four inches and one inch thick, as a holder for the emery paper. Wrap a piece of the emery paper, of the grade thought suitable for acting on the dial surface, around the block, and rub over the dial till the rust and stains are gone. Then take a finer grade and smooth it down, using finer and finer paper till the brass surface is ready for the last polish.

Then put the dial on an iron plate, which should be heated from below, until it reaches a temperature of about 300° Fahr., or until it will hiss when you spit on it. The filling may be made by melting together six parts by weight of best shellac and one part of ultramarine blue. Mix well and make into sticks convenient to handle. When the dial has been heated up as before described, rub a stick of this filling over the dial till the figures are well filled in. Then let the dial cool down a little and scrape off the surplus wax. When it cools down to about 200° the wax leaves the surface of brass very readily, and the dial can be freed from all but a few traces of the filling. For a scraper use some steel edge that is thin, but smooth, so as not to scratch the brass. A good one can be made by grinding down the end of an ordinary putty knife and giving it a dull, smooth edge. Rub off the last traces of the wax with a rag wet with alcohol. The dial is now supposed to be clean, free from scratches and ready for the final polish, which can be given by rub-

bing with Vienna lime and turpentine applied with a rag.

The filling spoken of is black. If a red filling is wanted, use vermillion with the shellac instead of the ultramarine blue. For blue figures, make the filling with light cobalt blue, and shellac. Lastly lacquer the plate carefully. As our correspondent doubtless is fully aware, a lacquer is merely a thin lac varnish, sometimes colored with turmeric or something to give it a gold shade. They can be bought anywhere ready made. In putting on the lacquer it should be done quickly, to prevent the alcohol in it from dissolving the shellac in the filling of the figures.

RENOVATING OIL STONES.

Atlanta, Ga., Nov. 26, 1890.

Secretary of the W. & J. U.:

I have a couple of large oil stones which have laid aside until the oil is dried and gummed into them. As they are valuable stones I would like to know what to do to restore them. CARELESS.

MR. O' LEVER recommended to soak them in benzine for a few days, brushing them off occasionally, and finally scouring them thoroughly with a stiff brush. Then wash well and lay away till the benzine has entirely evaporated, when they will be as good as new. The ordinary animal or vegetable oils are not so suitable for use on oil stones as petroleum. Glycerine is also good, or glycerine and alcohol. The advantage of glycerine is that it does not dry up and clog the stone as common oils do.

REMOVING QUICKSILVER FROM A GOLD RING.

Tyrone, Pa., Dec. 4, 1890.

Secretary of the W. & J. U.:

I have a heavy gold ring left to be cleaned. The owner rubbed quicksilver over it to make it bright, but it made the surface so soft that the chasing rubbed off. How can I do the best job on it? G. W. L.

MR. ROLLIVER replied that the first thing to be done was to drive off the quicksilver. The ring should be laid on an iron plate or block and heated to about 700° Fahr., or until it begins to darken, then dip in a solution of cyanide of potassium. If the mercury has soaked into gold pretty deeply, as is probably the case, this heating will need to be done several times to get the quicksilver out from the interior. Otherwise it will work out after a while and discolor the ring again. If the chasing is so much disfigured that it looks badly, you can either give it to the engraver to cut deeper, or turn it all off in the lathe and make a smooth ring of it. If not injured enough to require that, re-polish it only.

JEWELERS' PICKLE.

Aurora, Ills., Dec. 9, 1890.

Secretary of the W. & J. U.:

What is the best pickle for cleaning up gold jewelry after hard soldering?

B. J.

MR. ROLLIVER also responded to this question, saying that the usual jewelers' pickle is made of 5 parts of water to 1 of sulphuric acid. When something is wanted that will "take hold" more than this, a little muriatic or nitric acid is added to it. For Roman colored goods, especially, muriatic acid is added. If you have trouble with a gold article, and it looks green or white after being in the above sulphuric acid pickle, make a pickle of strong sulphuric acid and saltpeter, equal parts, heat it boiling hot, hang your article on a hook made of copper wire and dip in the boiling liquid, then wash. If the color is not good, repeat.

CEMENT TO FASTEN RUBY PINS.

Austin, Texas, Nov. 12, 1890.

Secretary of the W. & J. U.:

What is the best cement to fasten ruby pins in lever watches, and how is it made? H. R. M.

MR. DETENT replied that many watchmakers use a thick gum made of shellac in alcohol, but that has the fault that it boils up when heated. The best material is made by melting together 3 parts best shellac and 1 part gum myrrh. While soft, draw it out into threads and let them cool Put a small piece of one of these filaments in the hole, warm the metal and insert the ruby pin, which is then trued up while the cement is soft.

Mr. Rose's business card shown at the last meeting evidently interested one jeweler, as the following letter read by the Secretary testifies:

Machias, Me., December 8, 1890.

Secretary of the W. & J. U.:

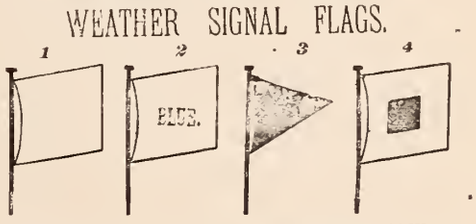
I have been very much interested in articles on window dressing and advertising in THE CIRCULAR.

I enclose a business card which I have recently had printed and which may be of interest to others. In explanation would say that the government furnishes at government expense the forcasts wherever practicable and where they have no signal station, provided a responsible party purchases the flags and pole and displays the flags promptly on receipt of telegram.

It is needless to say that it attracts attention, and will as long as the weather interests people. I have erected a pole on my store and think it is the best ad. for the money I ever heard of. Yours respectfully,

G. W. GOODHUE.

The back of the card submitted was a follows:



Clear or Fair. Weather. Rain or Snow. Temperature Flag. Cold Wave.

Number 1, white flag, always indicates clear or fair weather, no rain.

Number 2, blue flag, indicates rain or snow.

Number 3, black triangular flag, always refers to temperature, when placed above numbers 1 or 2 it indicates warmer weather; when placed below numbers 1 or 2 indicates colder weather; when not displayed, the indications are that the temperature will remain stationary, or that the change in temperature will not vary five degrees from the temperature of the same hour of the preceding day.

No. 4, cold wave flag, indicates the approach of a sudden and decided fall in temperature. This signal is usually ordered at least 24 hours in advance of the cold wave. It is not displayed unless a temperature of 45 degrees or less is expected, nor is flag number 3 displayed with it.

When displayed on flag-poles the signals should be arranged to read downwards; when displayed from horizontal supports a small streamer should be attached to indicate point from which signals are to be read. The signals may be withdrawn at 3 P. M.

The Machias *Union* of recent date said, "Mr. G. W. Goodhue has established a Signal Service at his store. He has arranged to receive dispatches every week day morning from the Weather Bureau in Boston giving the probabilities for the next twelve hours, and from a thirty foot staff erected on his store will display the white, black blue, crescent or other flag as the signs predict. He has also issued for general distribution a neat card, that all may learn the signal code. That this will prove of great benefit to our people goes without saying, and it is a venture wholly his own. What won't Goodhue do next?"

Owing to press of holiday business the members then concluded to adjourn.

The Spoon Craze.

THE idea of collecting spoons from every European city, which began about three years ago in earnest by our American relatives, has developed into nothing short of a craze. In London the trade disregarded it, but it was not so on the Continent. A number of cities have laid themselves out to the production of symbolic and characteristic spoons. How much additional trade this has brought them is not easy to say; certain it is that our American cousins very rarely buy a larger article first visit. They look in, and guess they'll call again if they are favorably impressed. Next time they bring a friend, and all are sure to want "odd spoons." Show them something this time; they buy, and the transaction will be sure to lead up to a better business.—*English Exchange.*



HAIRSPRING COLLET FOR WATCHES.

The illustrations below represent an improved collet for hairsprings, invented by W. E. Banta, Springfield, O., (Oct. 21st, 1890). Fig 1 shows a spring secured in the collet, and fig. 2 a perspective view of the collet alone. The improved features consist essentially, of an annulus forming the collet and having an incision therein into which the spring is fitted, and so fashioned that the spring passes from within it conveniently round the periphery of the collet.

The letter *A* refers to a metallic annulus, either divided as seen at *B*, or contiguous throughout, and which forms the hair-spring collet of a watch, the central hole in it serving to receive the shaft

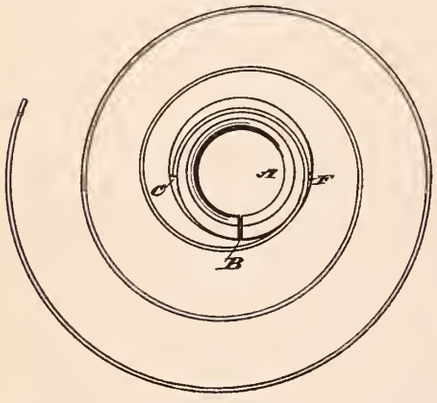


FIG. 1.

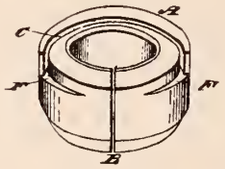


FIG. 2.

that carries the spring. The slot at *B* enables the collet to be compressed tightly around its shaft. In one end of the collet preferably the upper, is formed an incision *C* of sufficient depth to receive the width of one end of the hairspring. The direction of this incision is preferably eccentric to the periphery of the collet, whereby it terminates at one or both ends of the periphery to allow the spring to extend conveniently and without interruption from the incision to and against and round the periphery, as shown in fig. 1. This is the preferred form; but the invention does not stop with the particular direction of the incision.

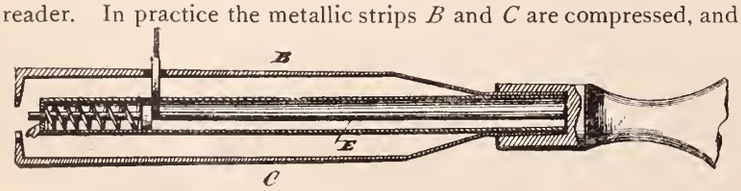
It will be seen from fig. 2 that the incision in entering upon the periphery leaves two tapering shoulders *F*. The one of these from which the spring projects serves to support still farther round the collet.

Among the practical advantages of this collet may be noted its cheapness and simplicity of construction, its adaptation to firmly hold the hair-spring without in anywise boring, rebending, and changing it, and also the ease and quickness with which the spring can be inserted and removed should occasion require.

WATCH HAND REMOVER.

WHAT should be an effective device for watchmakers' use is illustrated below. It is the invention of Paul H. Nefflen, of Keyser, West Virginia, who received patent letters on Nov. 11. The figure is a longitudinal section of a watch hand remover.

The construction of the parts will be readily understood by the reader. In practice the metallic strips *B* and *C* are compressed, and



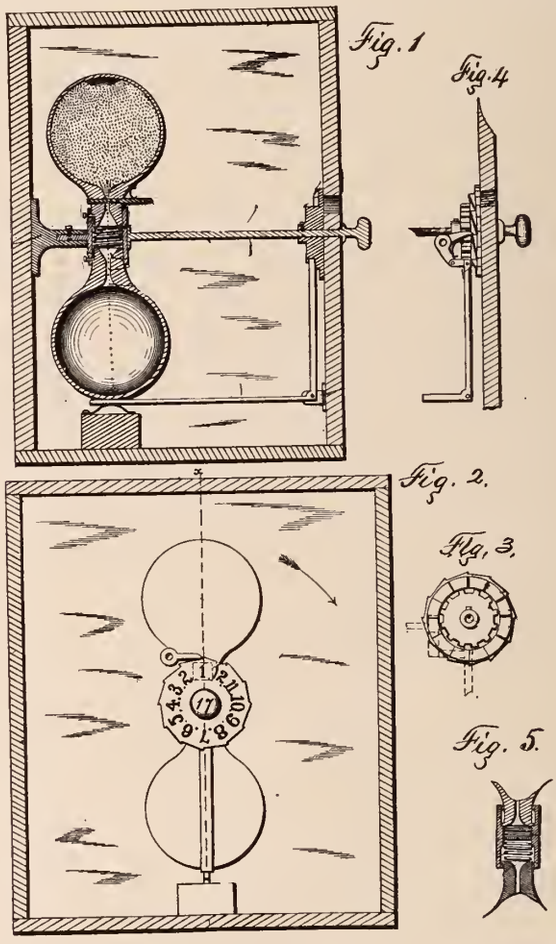
thus caused to nip the watch hand on its lower side, and simultaneously pin *E* is pressed down upon the center post of the watch, and a slight relaxation of the hand pressure causes retraction of the metallic strips and lifts the watch hand off the post.

This hand remover prevents all danger of cracking the dials, breaking the center post and losing the watch hands, and as the pressure is equally distributed, it follows that however tight the hands are fastened on the center post they are readily removed.

TIME MEASURING DEVICE.

THE idea of the invention to be described (patented December 2, 1890,) is so novel and original that it has caused considerable comment among scientific men. The device is new from the outset, and the inventor, W. D. Hawley, Syracuse, N Y., has obtained a fundamental patent on it. It may not be out of place to state how the inventor happened to conceive the idea of utilizing the "Hour Glass."

From time to time jewelers are asked to furnish watchman's time detectors; while there are a good many such devices on the market they are costly, unless an unreliable one is furnished, which would



be of little use. The idea presented itself that a cheaper apparatus and, at the same time, one that could not be cheated or tampered with might be made. With that end in view, the inventor decided in his own mind that the principles of the hour glass might be employed, and after months of work and study he is able to show what he claims to be without exception the most simple watchman's time service ever brought to notice.

Figue 1 is a vertical section on line *x x*, fig. 2, of this invention set up in a case for use as a watchman's time detector. Fig 2 is a front elevation of the same with the casing in section. Fig. 3 is a plan of the inner face of the dial and the ratchet thereon Fig. 4 is a sectional side elevation of a dial-shifting mechanism of a slightly different construction from that shown in fig. 1. Fig. 5 shows the perforated regulating slide inserted through the connecting sleeve and having the extensor spring in sections, one above and the other below the slide, instead of through the neck of one of the hour glass sections, as shown in fig. 1.

The main idea is that the sand run for one hour. At the end of the hour it registers 1 on the dial. The watchman's duty is, of course, to make his hourly visit and reverse the glass, which is done by means of a handle. The sand will then run again for one hour, and at the end it will register again on the dial number 2. If the watchman is on duty twelve hours he must show number 12 registered on the dial when he goes off duty. To do this he must reverse the hour glass once an hour. If he neglects that operation the dial will not register, and it will clearly show how many times he has failed to visit the station.

The hour glass is divided and has a dial between. It is all worked by gravity attraction, and it is impossible for the watchman to turn it except at the end of the hour. It is locked, and by no means is it possible for him to cheat by false registering. There is an auxiliary device for changing the length of time; the sand flows and therefore the registering dial will be moved at any interval during the hour as desired. Such is designed for places where the watchman is required to make visits oftener than once each hour.

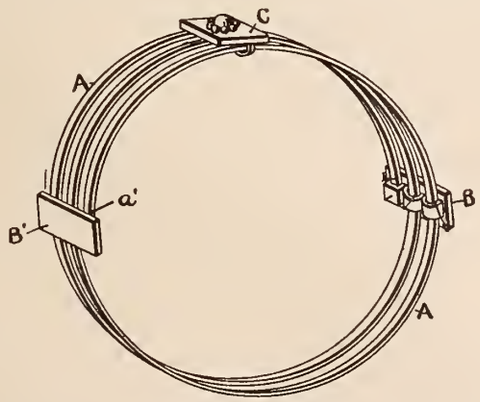
The dial consists of as many ratchet teeth (each one plainly numbered on its face) as there are visits desired to be made by the watchman. There is very little to describe in the device, as the mechanical construction is composed of so few parts; a lever or two, as many rollers and the dial wheel. The whole is set up in a suitable case entirely enclosed excepting a small opening or window through which the number is seen.

The foregoing describes what is termed the "central station." Of course, it is desired that all parts of a building should be watched as well as the office. From each station a wire (with simple push button) is run direct to the hour glass. There is another wheel with as many teeth as *stations* by which the hour glass cannot be reversed unless *each* station has been visited. This forms the second lock, because every button has to be pushed to push around the wheel, which has to make a complete revolution before the glass can be reversed. So each station, as well as the hour glass itself, requires an hourly visit. It is possible to use the device for a great many purposes; in fact, it may be made to do almost anything in a mechanical way that can be decided on at a pre-determined time. There has just been formed a stock company under the name of "The Hour Glass System Co," and other uses for the system are expected to receive their share of attention in the near future. The watchman's time detectors are now being made for the market. The inventor, who is also the manager of the company, will furnish any desired information.

EXTENSIBLE BRACELET.

EDWIN WHITNEY, Attleboro Falls, Mass., assignor to Read & Lincoln, Providence, is the patentee of the bracelet here described, which is mainly composed of a continuous piece of wire or material.

The figure represents in perspective a bracelet embodying the invention. *A* is the continuous strip of material which may be of



metal or other suitable material, and be round, oval, polygonal or of other preferred form in cross section. The strip is bent upon itself so that the ends pass by each other, and the end *a* is attached to a plate or keeper *B* in any suitable manner, and the end *a'* is attached to the keeper *B'* in any preferred manner.

The strip *A* may be formed into any desired number of convolutions. In the figure three half convolutions are shown above the keepers *B B'*, and two half convolutions are shown below the same. An ornamental member *C* may be combined with the strip *A*.

The bracelet can readily be expanded to pass over the hand, and the strip *A* is preferably composed of a material having resilience, so that the bracelet will resume its normal shape.

RECENT PATENTS.

The following list of patents is compiled from the records of the United States Patent Office, and especially reported to THE JEWELERS' CIRCULAR.

Issue of November 18, 1890.

DESIGN No. 20,317.—KNURLING-TOOL. CASPER SCHAEFER, SAG HARBOR, N. Y., assignor to the Fahy's Watch-Case Company, same place. Application filed March 23, 1888. Serial No. 268,286. Term of Patent 14 years.

DESIGN No. 20,334.—KNIVES. GEORGE W. STEDING, BOWLING GREEN, MO. Application filed October 22, 1890. Serial No. 368,988. Term of patent 14 years.

DESIGN No. 20,338.—HANDLE FOR SPOONS, FORKS &C. ROBERT LEDING Washington, D. C. Application filed October 22, 1890. Serial No. 368,987. Term of patent 7 years.

DESIGN No. 20,339.—HANDLE FOR SPOONS, FORKS &C. ROBERT LEDING, Washington, D. C. Application filed August 18, 1890. Serial No. 362,340. Term of patent 7 years.

DESIGN No. 20,340.—SOUP-SPOON.—NATHAN A. WHEELER, ALPOWA, WASH. Application filed October 23, 1890. Serial No. 369,134. Term of patent 14 years.

DESIGN No. 20,341.—TABLE-KNIFE. ARTHUR W. COX, BALLARDVALE, MASS. Application filed October 18, 1890. Serial No. 368,606. Term of patent 14 years.

DESIGN No. 20,345.—BACK AND HANDLE FOR BRUSHES.—JOHN F. WHITNEY, Brooklyn, assignor to Dominick & Haff, New York, N.Y. Application filed July 30, 1890. Serial No. 360,396. Term of patent 7 years.

TRADEMARK No. 18,644.—WATCH-CASES. METROPOLITAN WATCH COMPANY, New York, N. Y. Application filed April 24, 1890. Used since April 1, 1888. "The representation of three acorns surmounting a horseshoe."

440,693 —SEAMLESS COMPOUND GOLD WIRE. LEVI L. BURDEN, PROVIDENCE, R. I., assignor to the Burden Seamless Filled Wire Company, same place. Filed March 11, 1890. Serial No. 343,524. (No model.)

440,694.—SEAMLESS PLATED HOLLOW WARE. LEVI L. BURDEN, PROVIDENCE, R. I., assignor to the Burden Seamless Filled Wire Company, same place. Filed March 27, 1890. Serial No. 343,524. (No specimens.)

440,847.—PLATING METAL. GEORGE U. MEYER, PROVIDENCE, R. I. FILED Sept. 9, 1890. Serial No. 364,464. (No specimens.)

440,877.—HAIR-SPRING STUD FOR WATCHES. CHARLES T. HIGGINBOTHAM. Thomaston, Conn., assignor to the Seth Thomas Clock Company, same place. Filed Feb. 7, 1890. Serial No. 339,569. (No model.) In a watch, the combination, with the balance-cock thereof, of a hair-spring stud provided with a transverse notch, and a stud-holder adapted to be secured to the balance-cock, and constructed with a bearing extending in the direction of the length of the slot and having bearing-surfaces corresponding to surfaces therein.

440,878.—STEM WINDING AND SETTING WATCH. CHARLES T. HIGGINBOTHAM. Thomaston, Conn., assignor to the Seth Thomas Clock Co., same place, Filed Feb. 7, 1890. Serial No. 339,570. (No model.) In a stem-winding and stem setting watch, the combination with a winding-train, of a movable carrier carrying one of the wheels thereof, a setting train, a movable carrier carrying one of the wheels thereof, and a sliding coupler carrying no wheels itself, but connected with the carriers, so as to move the same and alternately their wheels into and out of gear,

440,898.—CALLING DEVICE FOR CLOCK TELEPHONE-LINES. JOHN A. MCMANMAN, Milwaukee, Wis. Filed March 21, 1890. Serial No. 344,712. (No model.)

440,952.—MANUFACTURE OF COMPOUND ALUMINIUM PLATES. CHARLES H. LAND, Detroit, Mich, Filed Sept 1, 1890. Serial No. 363,665. (No model.)

441,046.—WATCH-PROTECTOR. CHARLES C. WRIGHT, LONDON, ENGLAND. Filed March 25, 1889. Serial No. 304,714. (No model.) Patented in Eng., Jan. 25, 1889. No. 1,355; in France, Feb. 19, 1889. No. 196,172; in Germany, Feb. 20, 1889, No. 21,719, and in Belgium, Feb. 20, 1889, No. 85, 104.

Issue of December 2, 1890.

DESIGN No. 20,365.—BADGE.—EDWARD G. LOCKE, CHICAGO, ILL. APPLICATION filed October 30, 1890. Serial No. 369,860. Term of patent 7 years.

TRADE MARK No. 18,668,—WATCHES.—THE WATERBURY WATCH COMPANY, Waterbury, Conn. Application filed October 16, 1890. Used since May 15, 1890, "The word 'Addison.'"

441,632.—LAMP-SHADE SUPPORT.—GEORGE W. BALDWIN, MERIDEN, CONN., Assignor to Edward Miller & Company, same place. Filed June 5, 1890. Serial No. 354,419. (No model.)

441,651.—SPECTACLE-CASE.—LOUISA L. EYRE, PHILADELPHIA, PA. FILED JULY 10, 1890. Serial No. 358,276. (No model.) A trough-shaped or arched stiffening-plate at the center of the case, whereby the nose-piece or other contents may be protected at that point.

441,661.—TIME-MEASURING DEVICE. WILLIAM D. HAWLEY, SYRACUSE. N. Y. Filed Feb. 8, 1890. Serial No. 339,682. (No model.)

441,685.—Caliper Adjustment.—Arthur Munch, Milwaukee, Wis. Filed Aug. 21, 1890. Serial No. 362,579. (No model.) In a calipers, the combination, with the two legs hinged together on a pivot, of an adjusting-bar hinged on the same pivot and a screw journaled in a post swiveled in one of the legs and turning into a post swiveled on the bar.

441,708.—Winding-Arbor for Clocks.—Floyd L. Shaw, Rockland, Me., assignor of two-thirds to Bradford K. Kalloch, same place. Filed Jan. 30, 1889. Serial No. 298,079, (No model)

441,822.—Thimble-Die.—Joseph Browning, Philadelphia, Pa., Assignor to Simons, Brother & Co., same place. Filed April 2, 1890. Serial No. 346,253. (No. model.)

441,833.—Watch-Case Spring. Peter A. Florimont, Brooklyn, N. Y. Filed June 28, 1890. Serial No, 357,039. (No model.)

441,884.—Plated Wire.—George U. Meyer, Providence, R. I. Filed May 15, 1890. Serial No. 351,929. (No model.)

441,885 —Plated Wire.—George U. Meyer, Providence, R. I. Filed July 1, 1890. Serial No. 357,356. (No model.)

441,886.—Seamless Plated Wire.—George U. Meyer, Providence, R. I. Filed Sept. 9, 1890. Serial No. 364,460. (No specimens.)

441,887.—Arbor.—George U. Meyer, Providence, R. I. Filed Sept. 9, 1890. Serial No 364,461. (No model.)

441,888.—Process of Drawing Seamless Tubes.—George U. Meyer, Providence, R. I. Filed Sept. 9, 1890. Serial No. 364,462. (No specimens.)

441,889.—Arbor —George U. Meyer, Providence, R. I. Filed Sept. 9, 1890. Serial No. 364,463. (No model.)

441,892.—Apparatus for Electro-Plating.—William J. Possons, Cleveland, Ohio, assignor to the Brush Electric Company, same place. Filed Oct. 18, 1889. Serial No. 327,411. (No model.)

441,893.—Apparatus for Electro-Plating.—William J. Possons, Cleveland, Ohio, assignor to the Brush Electric Company, same place. Filed Oct. 21, 1889. Serial No. 327,699. (No model.)

441,894.—Apparatus for Electro-Plating Carbons or other Articles.—William J. Possons, Cleveland, Ohio, assignor to the Brush Electric Company, same place. Filed Oct. 17, 1889. Serial No. 327,294. (No model.)

441,908.—Electric Clock Alarm.—Matthias W. Tiedemann, Brooklyn, N. Y. Filed June 27, 1889. Serial No. 315,777. (No model.)

441,915.—Opera Glass Holder.—Leon Winterdorf, New York, N. Y. Filed June 26, 1890. Serial No. 356,763. (No model.) The combination with an opera glass having a recess formed in one of the cross-pieces uniting the lens-tubes, of a rod provided with a projection fitting into the recess, and a spring-catch for locking the projection in the recess.

441,917.—Sliding Guard for Eyeglasses.—Louis Alexander, Brooklyn, N. Y. Filed May 17, 1890. Serial No. 352,193. (No model.)

441,977.—Device for Mounting Counter-Shafts.—Jacob W. Riglander, New York, N. Y. Filed April 17, 1890. Serial No. 348,373. (No model.) The combination with the bracket and its flat faced rigid lug of a yoke, carrying the counter-shaft and having flat-faced paralell ears, constructed to hug the lug of the bracket, this yoke between its ears being provided with a slot and a clamping-screw.

442,022.—Nose-Guard for Eyeglasses.—William Dengler, New York, N. Y. Filed March 1, 1890. Serial No. 342,222. (No model.)

442,056.—Watch-Pocket Fastener.—James Kershaw, London, England. Filed July 3, 1890. Serial No. 357,047. (No model.) Patented in England April 28, 1890, No. 6,455.

442,062.—Glazier's Diamond.—John E. Lloyd, Brooklyn, N. Y. Filed Aug. 27, 1890. Serial No. 363,217. (No model)

Issue of December 9, 1890.

Design No. 20,368.—Belt Ornament.—Max Hecht, New York, N. Y. Application filed November 8, 1890. Serial No. 370,809. Term of patent 3½ years.

Design No. 20,381.—Handle for Spoons, Forks, &c.—John Mason, New York, N. Y. Application filed November 6, 1890. Serial No. 370,547. Term of patent 7 years.

Trademark No. 18,693.—Knives, Forks, Spoons, and other Articles of Flat Ware.—Rogers & Brother, Waterbury, Conn., and New York, N. Y. Application filed October 18, 1890. Used since October 10, 1890. "The word 'Tuxedo.'"

442,142.—Seconds-Hand Tool for Watchmakers.—Augustus Schwerter, New York, N. Y. Filed May 23, 1890. Serial No. 352,902. (No model.) This jeweler's tool, has a handle and paralell spring-arms, bent at right angles at their ends to form vise-jaws, each having a recess adapted to grasp the tube of the seconds-hand, together with a sliding ring.

442,194.—Blow-Pipe.—Leroy M. Mathews, Lawrence, Kans., Assignor to the Wilmington Dental Manufacturing Company, Philadelphia, Pa. Filed June 20, 1890. Serial No. 350,056. (No model.)

442,246.—Apparatus for Ornamenting Hollow Ware —Rush P. Chapman, Hartford, Conn. Filed July 2, 1890. Serial No. 357,535. (No model.)

442,271.—Finger Ring.—William Meerbott, Jr., Jersey City, N. J., assignor to S. F. Myers & Co., New York, N. Y. Filed June 21, 1890. Serial No. 356,221. (No model.) The ring or other article having a box-shaped setting with a slot in the bottom plate, in combination with an ornament having a stud connected to the back thereof, with a notch in the side of the stud, and a lever pivoted within the box of the setting, having its moving end in line with the slot, whereby the lever can be turned to connect with the stud or be disconnected therefrom by an instrument introduced through the slot.

442,301.—Watch.—August Amaron, Denens, Switzerland. Filed April 11, 1889. Serial No. 306,905. (No model.)

442,377.—Watch-Bracelet.—Tom. G. Hull, London, England. Filed Sept. 15, 1890. Serial No. 365,093. (No model.) Patented in England March 19, 1890, No. 4,313. The combination, with a bracelet, of a watch attached to one end or shoulder of the same, a toothed wheel in the watch, a pinion on the barrel-arbor engaging the toothed wheel, and a link connecting the toothed wheel with that end or shoulder of the bracelet opposite the one to which the watch is attached.

342,443.—Watch-Case Bezel.—Christian Kornrumpf, Huntingburg, Ind. Filed July 16, 1890. Serial No. 358,919. (No model.) A metallic bezel, a crystal, and a ring of celluloid, zylonite, or other similar material.

Issue of December 16, 1890.

442,757.—Finger-Ring.—Frederick A Schlosstein, Newark, N. J. Filed April 29, 1890. Serial No. 349,890. (No model.) In combination with the body having an angular tube, a stone and an initial letter or other ornament having an angular shank arranged telescopically within the angular tube.

442,917.—Ornamental Chain.—Charles D. Reynolds, Providence, R. I. Filed Oct. 10, 1890. Serial No. 367,727. (No model.) An ornamental chain, having the links or units thereof formed each of two struck-up plated semi-units provided with integrally-formed eyes well rounded cross-sectionally to conceal the base-metal lining, and rings or small links passing through the eyes to connect the several units.

Correcting the End-Shake of a Barrel Arbor.

THE beveling of the barrel teeth will sometimes not free the center wheel; when this is case, we must look for other cures; or perhaps, I should rather say, we should look for other causes. In most cases, the cause is in the end-shake of the barrel arbor. There is more than one way to correct this. We will suppose the excessive end-shake will allow the barrel to get too high and foul with the center wheel when the inside shoulder is in contact with the top shoulder of the barrel arbor; yet we find that if we press the barrel down so that the shoulder on the barrel lid is in contact with the bottom shoulder on the arbor, there is then sufficient freedom for the center wheel. Some would cure this by simply striking the center of the barrel a sharp blow on a large round-headed punch, which would lessen the end-shake of the barrel arbor and most likely correct the fault. But suppose this blow also puts the barrel out of truth, the workman will very likely have produced a greater evil than before and one which is corrected with much greater difficulty. It is better therefore, to try some other method than to run the risk of ruining the barrel.

Suppose we plant a small collet upon the barrel arbor—in this case at the top shoulder—this will have the required effect. Of course, we must have the collet a little smaller in diameter than the barrel arbor, while the hole in the collet must be only just large enough to fit on the shoulder; the thickness will vary according to the required amount in order to correct the end-shake. I may say here that a barrel end-shake should never be more than just free. Just notice the detrimental effects of, in some cases, even the least amount of end-shake, where the fusee and chain are used. I have no doubt but that most of the readers of The Circular have at some time or other had a little trouble in this particular. With a very flat fusee watch, the least thing in end-shake, either in the barrel or fusee, will cause the chain to run out of the fusee grooves. We then know what follows. Now, there are many who try to remedy this defect by closing the holes in the plate, which is in many cases done with a punch; this simply meant that the next man who sees the job will be liable to ask if there has been a blacksmith at work. Yes, there are times when it is a shame to use them. Why hammer and bruise the plate, when the job can be done without any such methods? There is nothing that looks so bad to a practical man as to see a plate smashed about with a punch. It may be excusable to use a punch for closing a hole in an old thirty-hour clock, but even in this it is doubtful, in these days of bouchons. It is not only the appearance of the butchery, but just see what kind of a surface the hole has for the pivot to work in. Take for instance the fusee; it will always be near toward the barrel; hence, if the hole is closed it has to be done on the side nearest the barrel, in order to bring the fusee upright to its original position. But when it is punched on this side, in all probability, there is only just one part of the hole in contact with the fusee top pivot and most likely this prominent part will very soon become worn down again, and the whole job be just as bad as it was before.

PARIS GOSSIP.

[From Our Special Correspondent.]

DEMAND FOR PERFECT QUALITY GOODS, BOTH INTRINSIC AND DECORATIVE—"LA PLANTE" EXHIBITION AND ITS EFFECTS—A MAGNIFICENT ICE-PAIL—THE POPULARITY OF PEARLS—SALE OF THE PRINCESS SOLTYKOFF'S COLLECTION.

Paris, Dec. 12, 1890.

All our manufacturing places are bustling with good, remunerative work, and there is every reason to believe that the profits for the month of December will prove as satisfactory as could be desired. Travelling salesmen, especially those who carry along with them a large stock of first-rate goods, are doing well. There seems to be a general demand for articles of good quality, both intrinsic and decorative. Our provincial retailers appear to have acquired lately a refined taste, which certainly causes them to be more difficult to please, but prevents them, on the other hand, from beating down the prices whenever they come across something really superior.

The high-class jewelers of the French towns generally come to Paris in the course of November and make a round of all manufacturing houses, from the smallest to the most prominent. In previous years they used to cast a rapid glance at the goods spread before them, and to choose very quickly what they thought would sell well. They now take a great deal more time to look at the articles. A handsome silver coffee-pot, whose workmanship won their admiration at first sight, will be put aside by them, if they discover in it a very slight scratch. An elegant jardinière will not take their fancy if a grain of solder, which ought to have been filed off, is visible upon a very close inspection. Of course, in cases like these, the manufacturer never fails to say that he can easily make another piece of the same pattern, and absolutely perfect; but our fastidious retailers do not always believe in it. When all retailing jewelers and silversmiths will be able to understand, not only the artistic value of the goods they sell, but also how they ought to be made to be considered well finished, manufacturers will keep their eyes constantly open and never allow a single piece to come out as sample so long as there is the most insignificant flaw in it. I am glad to acknowledge that, in several places, that object has already been attained.

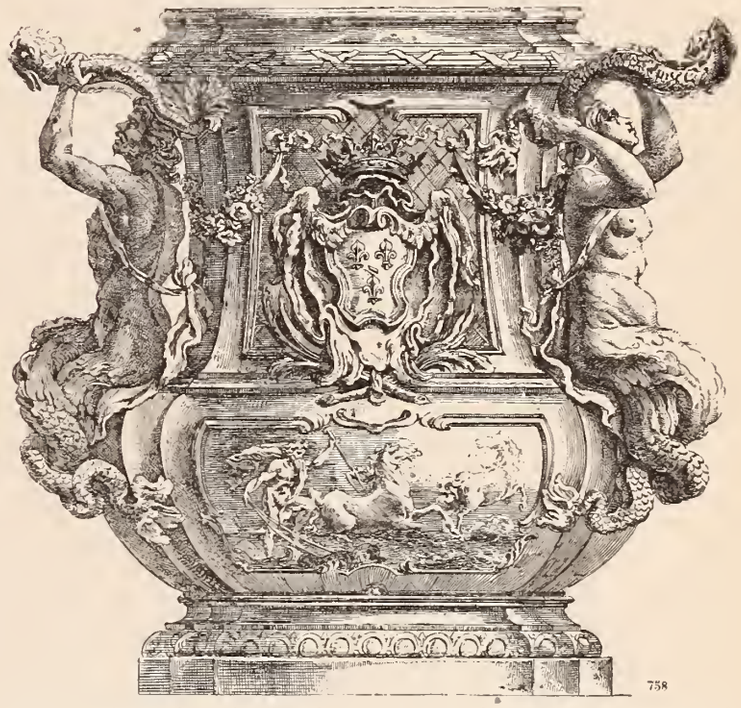
EFFECTS OF "LA PLANTE" EXHIBITION.

"La Plante" Exhibition, mentioned in one of my recent letters, and which is going to take place next year, either at the Palais de l'Industrie, or at the Palais des Arts Libéraux, Champ de Mars, is talked about a great deal just now. Mr. Falize, who started the idea, developed it at a meeting of the members of the *Union centrale des Arts Décoratifs* Let us quote a passage of his interesting lecture on that subject. "Plants offer an infinite variety of appearances; flowers are graceful, roots are capricious in their twists and shoots, stalks are delicate and supple, and the different shapes of leaves represent an innumerable collection of designs. A gathering of seeds, being extensively reproduced on a background, is of a pretty effect. Vases are often modeled after the shapes of bulbs and onions; apples, strawberries, artichokes, pine-apples, figs, corn-ears, gourds, melons, acorns, etc., have, at all times, been copied by artists, or introduced in the decoration of works of all kinds. Those models, supplied by Nature, have sometimes been rather freely imitated, but any artistic attempt to improve upon those perfect designs has always been a failure. Skilful chasers endeavor to reproduce to a nicety the bark of trees. Flowers are endowed with all the harmonious colors which might be dreamt of, and to enumerate all the beauties of the kingdom of vegetation which deserve to be reproduced by designers in all branches of decorative art would prove to be an endless work."

To force the attention of jewelers, silversmiths, keramists, etc., on the great source of superior inspiration is evidently the only way of freeing French decorators from the tyranny of styles. The public themselves, so partial to old shapes and fashions, will by degrees, take up the idea of encouraging a renovation in art. We may hope to see their idolatry for pseudo-artistic work of a questionable ancientness dwindle, little by little, into a sceptic indifference. Flemish Renaissance tapestries will then hardly obtain from them a passing glance; the delicate colors of Saxony porcelain will fade with neglect, and oxidized silver coffee-sets are bound to turn green with a sad want of chamois leather's most refreshing caresses. All this will, no doubt, take place before long. Yet I am compelled to declare that I see, for the present, no sign of it. In the silver line, the Louis Quinze style is still reigning; I recently paid a visit to several workshops, situated in aristocratic quarters, and saw the benches covered with pieces decorated in the rococo fashion.

A MAGNIFICENT ICE-PAIL.

Our illustration shows an ice-pail reproduced from that designed by J. A. Meissonnier, for the Duke of Enghien, in 1723. There is



more boldness in this beautiful work than is generally observed in pieces belonging to that period. It is a thorough Regence masterpiece, of a graceful and stately outline. The figures that hold the dolphins are of a fine effect. The bas-relief of Neptunes standing on a shell, are perfectly done in repousse work, and the horses goaded by the trident are full of life.

PEARLS IN THE ASCENDENCY.

Pearls have been for many years in high favor among our aristocracy. But their sway seems to have of late spread considerably. In all jewelry stores of note pearls are exhibited as center-pieces of bracelets and brooches, pendants of necklaces, etc., diamonds being merely used for accompaniment. A pretty carcan necklace consists of a white silk ribbon, whose two ends, in front, are covered with a circular ornament formed of a large black pearl, circled with diamonds. From this kind of clasp hang two diamond-studded cards, one holding a white, pear-shaped pearl and the other a pink one, the cards being of a different length. In all corsage garnitures, shoulder-pieces and skirt-embroideries made of jewels, diamonds are subservient to pearls. The queen of stones, for a short season maybe, is condemned to take the part of subaltern humbly seating, so to speak, at the foot of queen pearl's throne.

SALE OF A FINE COLLECTION.

The Princess Soltykoff's collection that has just been sold at the Hotel Drouot, contained several beautiful pieces. Let us mention: a watch, with chatelaine of the Louis Quinze period, in pierced gold, chased and adorned with arborized agates and bouquets in polychrome enamel, sold for 8,250 francs; an English watch and chatelaine of the eighteenth century, in chased gold, showing curled ornaments applied on red jasper slabs, together with floral arrangements, consisting of brilliants and rubies, 3,300 francs; another English watch in pierced gold, with double case, chased, exhibiting on the back a basket of flowers in enamel painting, with a chatelaine divided in four enameled floral motifs, linked together with chains, decorated in the same way, 5,700 francs; a watch made by Julien Le Roy, with chatelaine in chased gold and enamel, showing on the cap, some cupids among flowers in vari-colored enamel, on engine-burned background, 5,300 francs; a watch, made by Williamson, London, in repercé gold, on which comes out a peacock among flowers, with an arcade at the back, in translucent enamel, 3,800 francs. The jewels disposed of at that sale are not worthy of being mentioned here.

JASEUR.

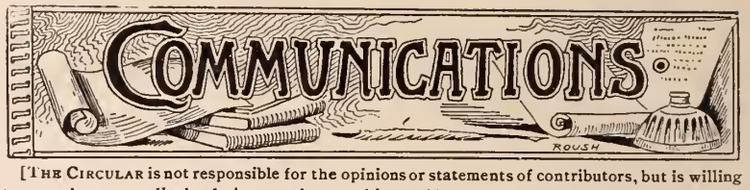
Damping Diamonds With the Tongue.

"DAMPING a diamond," is the peculiar name for a process in robbery which thieves sometimes adopt. It is popular when some rascal is without partners and obliged to work alone. By reason of the time he is to remain in the presence of his victim and the chance thus given to become acquainted with his looks, the rogue usually assumes some disguise, perhaps by donning a gray wig, bringing his eyes to a state of weak and watery inflammation with cinnamon or pepper, and assuming a large pair of goggles in consequence. In addition he will pull on a boot with a six-inch cork sole, grasp a cane, bend his back, totter when he walks, and have all the appearance of a crippled old man. In this guise he will drive up to some jeweler's. On entering the store his wants are found to be an unset diamond, or perhaps a pair of them. They must compare with one he has with him, as they are intended to be disposed of in a set as a present to his well-beloved daughter.

The diamond the thief exposes is fair and large—as large as he can get. He insists on making the comparison himself. He grows irascible, perchance, and orders the tradesman to bring out all his gems while he looks them over. To humor one who is evidently determined to become a desirable customer becomes the purpose of the jeweler's life. He spreads before the weak optics of his goggle-eyed inquirer an array of loose diamonds—probably on a background of black velvet to demonstrate and emphasize their brilliancy.

The irritable old diamond hunter is obliged to get his nose quite close to them. His eyes are weak, and so to see the gems he perforce has almost to bury his nose in them. While so engaged and while the jeweler is standing over them he picks up one, possibly two, with a quick dab of his tongue. This done, he complains that his eyes are not equal to the selection, and concludes to bring his daughter. To further delude the merchant, he may arrange to have that gentleman bring the diamonds to his house for the lady to look over. To this end he gives him a card, naming some aristocratic residence street. Then he enters his carriage and is driven away.

If the thief ever gets out with the diamonds he has "damped" they are gone; for while the merchant may miss them at once, and feel morally certain the old cripple is the man, he cannot prove it. One merchant who had lost several diamonds to the same man in this manner at last doctored some gems with a powerful drug, so strong, in truth, that the little which would in nature adhere to the hard surface of a diamond caused the operator to choke and gag. He caught the robber, but such luck is infrequent.



[THE CIRCULAR is not responsible for the opinions or statements of contributors, but is willing to accord space to all who desire to write on subjects of interest to the jewelry trade. All communications must be accompanied by a responsible name as a guarantee of good faith. No attention will be paid to anonymous letters. Correspondence solicited.]

A HINT TO POST-GRADUATE OPTICIANS.

Norristown, Pa., Dec. 17, 1890

To the Editor of the Jewelers' Circular:

DEAR SIR—I desire to submit for consideration by the graduates of Dr. Bucklin's School of Optics, some thoughts of mine relating to the formation of an association of the graduates of the above-named school, for the further advancement and enlightenment of the subject of practical optics. No doubt others, like myself, have after much practice and experience in correcting errors of refraction and accommodation, acquired much and valuable information, not to be obtained in any other way, and would be willing to impart such knowledge to our brother graduates, and receive in return such information as some more studious and observing individual may be the possessor of.

There are many ways (not to be mentioned here) open or to be opened for the securing of greater enlightenment on the subject of our chosen profession, and the benefits to be obtained are of value not only intellectually but financially. Among the many graduates representing different sections of the country, there will be, no doubt, many suggestions and opinions, from which a strong and sound foundation for the formation of a society in optics can be made.

As food for thought on this matter, I would say that we could meet together, impart to one another the knowledge gained in our practice by experience, suggest methods by which we may perfect ourselves in our work, secure Dr. Bucklin (should we meet in New York) or some other practical oculist to lecture before the graduates on such subjects as might be named at the previous meeting, as well as act as quiz master at the meeting after the lecture.

There are many things which we could do that would be of great advantage to us all, but I will not mention others of much weight until I learn the sentiments of the other graduates.

In the next issue of your excellent paper I hope to see some expressions from others on the subject.

Respectfully yours, A. B. PARKER.

TO PLATE WITH ALUMINUM.

Canton, O., Dec. 9, 1890.

To the Editor of the Jewelers' Circular:

I should like to ask you if you can tell me how electro-plating with aluminum is done. I take THE JEWELERS' CIRCULAR right along, and if you can give me the information through your "Workshop Notes" or any other way in your paper I shall be very much obliged.

A. H. ATCHINSON,
Hampden Watch Co.

[On page 74 of the September, 1889, number of THE CIRCULAR you will find an article headed "To Plate with Aluminum." The International Aluminum Works, 36 John street, New York, are the patentees of several processes.—ED.]

WHO WANTS A BARGAIN?

Shreveport, La., Dec. 6, 1890.

To the Editor of the Jewelers' Circular:

I have 15 or 16 volumes of THE CIRCULAR, 8 of which are bound, and I will sell them all for $15, as I am going to Europe for an indefinite period.

S. F. GORDON.

FOREIGN MATTERS

[From our Special Correspondent.]

IN AND OUT AMONG THE LONDON SHOPS.—HOLIDAY NEWS AND HOLIDAY NOVELTIES.

London, December 15, 1890.

As a rule our manufacturers and dealers are sufficiently occupied at this season of the year, with the preparations made and making for the Christmas trade. It happens, however, that this season there are other matters claiming very considerable attention, and some of them causing no little anxiety. I am not now alluding to matters political, though in that direction there is plenty of excitement. The labor question is going to be far more extensively discussed in connection with an "Eight Hour bill," than it has been in connection with any other topic. This concerns our industry only so far as it is a general trade question and must therefore affect all trades. I do not apprehend that it will seriously interfere with our industries directly But if such a bill as is talked about should ever become law, it will of course cause a considerable disturbance in other industries, through them our own will be affected.

Whatever hopes or fears may be entertained as to the future, I am pleased to report a satisfactory "present." Trade in nearly all our several branches is good and there is work in hand that will keep the majority of our makers fully occupied until the end of the year. If the gross total of manufactured goods does not amount to so much as it did at this season last year, there is the consolation expressed by many that the orders are more wisely placed, that there is far less likelihood of surplus stock in the hands of retailers, this New Year, than last. It will be remembered that the demand on manufacturers last January, and even until far into the spring was unusually limited. Wherever I have been I have heard the opinion expressed, that the trade this season is a sound one. Manufacturers do not seem to have forced trade, retailers do not appear to have ordered recklessly, and the business done has been a genuine result of the improved condition of the country.

EFFECT OF THE RISE IN SILVER.

Some branches have had difficulties of their own it is true. For instance, the variation in the price of silver has been the source of much perplexity. Makers have really not known how to price their goods, as such frequent fluctuations are new to them. There is not the demand for silver jewelry there was. I am not able to say whether this may be attributed to the increased cost, or whether there has been a change in the public taste. The demands for "Hall marked" articles—silver and gold—is certainly increasing, the returns of the assay offices showing a very considerable increase in all qualities over the returns for the same period of last year.

A FIRM DIAMOND MARKET.

The price of diamonds keeps high, and there is no immediate sign of any fall. The demand by the mounting trade upon the dealers is therefore not so good as it was. It is thought that in some quarters, would-be buyers are waiting for reduction. Some of these cautious gentlemen are obliged to make special purchases and there is no doubt that as it becomes more apparent that the present price of the stones must be maintained, purchases will be freely made. The fact is, the diamond is quite as much of a favorite with the public as ever it was. Other stones, rubies and emeralds, for instance, have been brought into close competition with it for public favor, but the diamond has more than held its own for nearly all the articles of personal adornment for which it has been used.

WINDOW DISPLAYS AT THE WEST END.

I have had a few hours' walk around some of the principal West End shops the last week. I have never seen finer window displays. There are some windows in Regent Street that are perfect studies. I quite like the white satin covered cases and stands, in which, or on which, many of the best articles are now displayed. I have seen some novel serpent bracelets fitted with two heads—one set with diamonds and the other with colored stones. From the specimens shown in our windows (I am not speaking now of new goods on show in our factories) it is quite evident that colored stones are in demand. I have seen some very charming designs in necklaces ornamented with them. I have noticed a preference for these in Paris for some time, but it appears that the taste for them is developing in London. Necklaces have not been in great request lately, but the alteration in the fashion of dress, is sure to induce, if not necessitate a return to this attractive personal ornament.

I have noticed an increased quantity and a greater variety of ear-drops, earrings, and other ear ornaments on show. One of the sweetest ear-pendants is a pearl in the shape of a pear hanging from a diamond in the ear. There are some pretty devices in feathers, arrows and darts, for piercing the ears. This kind of ear appendage is on the increase, as also are earrings with drops. There does not seem to be a preponderance of any particular line this year, not as a novel feature at any rate. Watch-bracelets are many and various, and seem to be doing duty as Christmas presents for 1890, as they did for 1889. There are some neat English and Swiss designs in gold and silver—the watches made in each case so that they may be worn in or out of the bracelets. Loose chain bracelets with the old-fashioned padlock are also being worn again. I have not seen one in use, but I notice many exposed for sale. There is the usual variety of colored and bright brooches, these are apparently cheaper in quality than before, but nevertheless they are pretty.

AN ECCLESIASTICAL BROOCH.

One of the most appropriate novelties is the production of a provincial jeweler of considerable fame, W. J. N. Masters, of Rye. The "Church Brooch," as will be seen, is quite of an ecclesiastical



character. As a work of art the brooch claims more than ordinary notice, while as a special gift for the season, it is most appropriate. It is a most suitable Christmas present to make to a Christian lady. The brooch is supplied in gold, silver or gilt, and is thus presented in a quality to suit any rank of purchaser. Its shape—a special oval—is that of the original seals pertaining to the old English Cathedrals and which are in use still for official documents. The center of the design is the Cross, the universal emblem of Christianity. The "quatrefoil" is meant to represent the four evangelists. The crook indicates spiritual power, and the sceptre temporal authority, while the trefoil is the symbol of the Trinity, and the circle of eternity. It will be seen, therefore, that a more comprehensive design could not well be embodied in one article. For those persons who may not be able to read all these significations, the seasonable character of the brooch is sufficiently indicated in the motto running round the border, "Spes mea Christus," Christ is my hope.

THE OLD BECOMES THE NEW.

In addition to many old fashions in brooches I notice the revival of other fancies of past days, in bracelets and pendants and other jeweled articles. As decorations pansies are still favorites and a beautifully cut minature scent-bottle has the top completely overlaid with an enamelled pansy, naturally executed. Fancy hairpins are becom-

ing more expensive every day, large, showy, and not altogether delicate pins have been worn sometimes. These are imitated by our factory girls to such an extent that it became necessary for persons of taste either to discard the use of them or change the style. They are doing the latter and in a way that I think will keep the style somewhat exclusive.

I was puzzled by the peculiar style of some "bracelets," as I called them, which I saw on a counter. In kindly explanation of some remark I made the assistant told me they were collars for "poodles—King Charles spaniels." I learned from a friend who has only just returned home, that the use of jewelry in our Australian Colonies is increasing rapidly. The fact that we are not increasing our exports there in like proportion is explained by the statement that there is now an extensive local production. Attention has for a short time been devoted from our export to our home requirements. The Christmas and New Year trade in our industries seems to increase in magnitude each year. I beg to wish you and your readers a happy and prosperous New Year.

VIGILANT.

CINCINNATI

[FROM OUR SPECIAL CORRESPONDENT.]

CINCINNATI, Dec. 25, 1890.

The old year is truly closing up in a blaze of glory for the jewelers. The jobber is satisfied, because he will realize a fine surplus this year. And such a season!—such a dazzle and show, such brilliancy everywhere! Everybody was gift-mad; everybody, from the wageworker to the aristocrat, elbowed each other in the great stores and in the crowded thoroughfares. The window displays and devices were never so alluring. No purse-string could be drawn against them. The purse may be lighter to-day, but the heart is merrier. For the past two months the press has been crying no currency, on account of the stringency of the money market and the conservativeness of the banks. Then the list of failures from all over the country have added their weight to the depressing effects; but, somehow, even all this has had no perceptible effect on the holiday-shopper. They are here in the usual numbers, and, from all appearances, have the currency.

It has been a mooted question, does it pay for one traveler to attempt to sell his goods at the expense of a rival house? The trade is ostensibly led to believe that the only reputable house in the country is the one that the traveler who, at that time, is trying to sell his goods, represents. Every traveler that comes along tells the same chestnut, and adds to boot that the other fellow represents a snide house. How is the dealer to discriminate? Does it not imbue him with prejudices against them all? The dealer, if he is of average intellect, no matter how remote from large cities, will at once become suspicious of something crooked in the jewelry art, and it makes him a wary and a fearful buyer. "Imitations are so perfect now," the fluent salesmen tells him; and it comes to the dealer like an inspiration "that is so," and he closes up like a clam.

There is another point touching the interest of the trade. Travelers say that no matter how well fixed a jeweler is he invariably demands the "on time" custom; he will not avail himself of the cash discount. The goods have to be paid for, and, when a dealer has the money at hand, it is 10% more on his profits to pay cash; why, it would be money ahead if he had to borrow the money at 6%. It is not consistent with the progress of this great country of ours. Americans have always been accredited with the peculiar tact of deriving benefit from every opportunity.

There is the consignment package evil—there is more complaint about the abuses in this line than in any other. Jobbers do not mind the increase of the demands for them, if it would profit them. But the average jeweler gets them for display only; he will push the sale of his own stock, extolling their virtues, and when the season is over, he will return the package, with thanks. The goods are shop-worn, and the jobber feels sore.

The Wadsworth Watch Case Company have been meeting with unparalleled success in the last few weeks. They have been compelled to increase their force every week to meet the heavy demand for their handsome new cases. Several new and artistic designs have been added; one has caught a single jobber to the extent of the full output of that design. The factory is running long hours. A new edition has been put up for the refining department. Other improvements will be added this year. The Wadsworth case must be seen to be appreciated. If you have not seen one write to them, and you can judge for yourself. It pays one to take a trip over to Newport and see the works.

Bene & Lindenberg, the big wholesale jobbers on Race street, report a fine increase in their business this year. They have given it their personal attention and been out on the road themselves, and, somehow, when the boss comes around there seems to be something solid in the sales. Bottom prices are reached, and the guarantee seems genuine. Mr. Bene has come home, and will remain until after the holidays; he says trade has been better, in the finer grades of jewelry, than he has ever known it. They have disposed of more diamonds this year and solid gold watches. He met with very liberal customers. Mr. Lindenberg will wind up the season this week. He has a very exclusive trade in the West; some of the dealers have been his customers for years. This shows that fair treatment has been given. We want more of this element in the business.

Among the manufacturers here the busiest are Homan & Company, silver-plated ware. The lines and the quantities they have turned out this last year would astonish some of their competitors, who think they are not to be feared. The Queen City is noted for progression, and what Yankee ingenuity can contrive and Western logic produce will soon let the world know; though the sun rises in the East it sets in the West, and it always goes down, figuratively speaking, in rosy splendor. The changes in production and quality, in the past year, have been a marked feature. Their ware is now in the leading salesrooms in the country. A still wider field is open to them, which they will improve this year. The past year wound up brilliant assets, but the present holds forth a still more cheering prospect.

Eugene & John Schweikert, specialists in jewelers' supplies, have reasons to rejoice for the past years' production. They have increased their business two-fold. They have given the small material department their special attention, and it has rewarded them handsomely. They have a standing reputation for promptness in filling orders, and suiting to the smallest item. They not only keep in stock everything a jeweler needs, but a full line of each; so that if fifty orders came in for the same thing at the same time they could fill them all, and suffer no inconvenience. It is an ideal supply house, and Western and Southern jewelers need not wait two weeks for an order to be filled by Eastern houses, when a day's notice will reach them.

WATER, KENTUCKY? OH NO!

The crowd gathered about the dead man. A card bearing "Louis Jones, Lexington." was found.

CHORUS—Lexington, what state?

A whisky flask was next found.

CHORUS—Lexington, Kentucky!

Then a Waterbury Watch was found.

CHORUS—Lexington, Massachusetts!!



[From Our Special Correspondent.]

Pretoria, Transvaal, Nov. 14, 1890.

South Africa is at present passing through a very serious financial crisis. That it will revive again may be taken as assured, because the depression now lying so heavily upon it is an experience common to all new countries, and has had to be faced in this part of the world on many previous occasions. It appears to be one of the laws affecting the welfare of nations that a new country must first pass through a series of booms and depressions before it can attain to a condition of permanent prosperity. South Africa has not yet emerged from the first stage, and consequently violent financial fluctuations may be regarded as the natural order of things for some time to come. At the present moment the commercial barometer is pointing to very stormy weather. Already the monetary cyclone has left many a wrecked fortune behind it, and before the devastation is complete many more will surely be swallowed up in the vortex. These periods of collapse form an interesting study, and show how one misfortune inevitably leads on to others. Success and failure seem to have in common the same prosperity of accumulation. "Nothing succeeds like success" is a true adage, as one success leads generally on to others. And so "misfortunes come not single spies but in batallions." The present acute financial crisis throughout South Africa affords ample confirmation of this aphorism. It has been reached through a succession of disasters all closely interlinked and forming a long chain which never would have existed had not the first fatal link been forged.

The radical cause of the widespread misery at present overshadowing South Africa was undoubtedly the gold craze, which emanated from the Witwatersrand about two years ago. Suddenly the whole country was thrown into a fit of the most violent speculation. Everyone who could scrape a few pounds together did so in order to buy scrip in the fond belief that in a single cast of the dice their fortunes were achieved. The result has been that a few have amassed enormous fortunes while the many have suffered ruin. Disaster has been brought upon countless numbers who were never participators in the huge gamble in gold scrip. Commercial concerns which sprang into existence on account of the apparent good times have gone to the wall, taking with them the fortunes of their promoters. Banks which joined in the gold lottery have closed their doors, and shareholders and depositors who were in no way responsible for the misplaced confidence of the bank directors and managers are suddenly reduced to beggary. These terrible reverses of fortune, coming in such numbers and dimensions, are spreading their direful influence far beyond the locality where the disaster originated. Not only in Johannesburg and throughout South Africa, but in England, America and Europe there are those who to-day have ruin staring them in the face as a result of the spurious spurt which the gold industry of the Transvaal made some two years ago. The origin of the collapse is easily traceable to the fact that the Witwatersrand gold mines were prematurely brought under public notice. It would have been better far for those now lamenting their lost fortunes had these mines remained unheard of until the present time. Had the work of developing the properties gone on quietly and steadily for the past two years without violent speculation taking place in scrip, it might have been reasonable for capitalists to now begin to give some of the stocks their attention. Instead of this, however, a wild rush was made upon the scrip of companies that had not even tried their ground, and it is now discovered that fabulous prices have been paid for absolutely worthless stock. If the present season of adversity has taught the lesson that before buying shares in a gold company it ought to be known what kind of a mine the company possesses, then it is possible that a fair attempt will be made to develop the properties. At all events until circumstances raise gold mining in South Africa from a mere blindfold speculation into an honestly and energetically prosecuted industry, South Africa will only continue to be the theatre of recurrent financial disasters.

The diamond trade has been fairly strong for some months past. The production has been kept well within the demand, and the big dealers have not rushed up prices as recklessly as they did a year ago, and therefore although prices are this week somewhat easier, a drop of any consequence need not be anticipated. Debris diamonds have also for several weeks commanded a ready sale at good figures, but I am informed on excellent authority that the market will this week close from ten to fifteen per cent. less than before. This fall will seriously affect many debris washers, as at the best of times the majority find it hard to make a respectable living, and seeing that the weekly sales of debris stuff now amount to about £5,000, the fall in prices will also have a bad effect upon the trade of Kimberley for the time being. Competition has lately got keener and keener among the buyers, so that one may expect the market will not remain weak long.

Trade in Kimberley is, however, seriously depressed at the present moment, and it is not going beyond the mark to say that but very few stores are paying expenses, much less producing any profit. Now that two of the mines—Dutoitspan and Bultfontein—are shut down, there are too many stores for the amount of custom obtainable even if times were better than they now are. Although I can scarcely anticipate any future return of the good old days, I do not expect business will long remain in its present condition, but rather that in the course of a few months the town will experience a revival in trade of a steady nature.

De Beers are the only shares that show any signs of life on the fields, and there are to-day buyers at £18, a good advance on last week, The blue ground washed by this company during the last twelve months yielded an average of £1 15*s* 7*d* per load. If the whole stock of ground were washed to-day the value of the yield would, at this rate, amount to about three million pounds. The enormous amount of ground in reserve constitutes the principal argument in favor of the stability of the company, and so long as the directors take care to increase their stock of blue and value such increase on equally modest lines as at present, so long will De Beers' shares continue to improve in value, and remain probably the very soundest stock to be found in mining investments.

Good diamond finds occasionally take place at the surface diggings around Kimberley, though generally this is unprofitable work. The other day, however, a poor man at Klipdam had the good luck to find a 123¼ karat stone. It was sold for £1,250, and but for a small flaw would have been worth £5,000.

The actual yield of gold from the whole of the Transvaal gold fields during the month of October amounted to 63,537 ounces. All the gold goes to London.

The official return of the diamond export during last month is not yet available, but there is information from good sources that the figures and values closely correspond with those of the previous month.

This is our summer season and the weather is hot. From far away Africa will the readers of The Circular kindly accept the greeting of "A Happy New Year."

Haynesville, La., Dec. 12, 1890.

I am just in receipt of the last number of The Circular, and beg to say, though I have not subscribed for it, that I have received several copies and am very highly pleased with it. You may enter my name on your subscription list, as I cannot do without it.

W. M. Wood.



[From our Special Correspondent.

Providence, Dec. 20, 1890.

Only ten days remain of '90, and as is usual at this time of the year, business in the jewelry manufactories has slackened up, all being now confined to filling holiday orders and finishing and a sorting stock preparatory to the making up of the annual inventory and balance sheet.

The present season has been far in excess of the average, and some of the more enterprising firms have been running their shops nights for about twelve weeks to keep up with orders for the holiday trade. The first season of the present year—for the jewelry industry has two seasons yearly—was poor, little business being done. The rainy weather, especially in the South and West, so interfered with business that the season proved to be one exceptionally "off." Since last May the principal obstacle in the pathway of prosperity in the trade has been the difficulty experienced in making collections. The extreme stringency of the money market now evisting has intensified the trouble, but money was sufficiently close several months ago to induce, if not to force, a withholding by even the best houses among purchasers That individuality plays a large part in the art of collections is shown by the fact that some men can call upon a debtor and obtain a settlement immediately after others have tried and failed to do so. The losses of the present season have, however, appeared to be less than those of the corresponding season of last year, and that was regarded as a very good season for the trade, too.

The prospects are that the season of 1891, the opening of which is not far off, will be prosperous, and, in fact, some manufacturers who are not inclined to be pessimistic in their views, prophesy for the next two years a season of general prosperity to succeed the prevailing financial depression, the approaching World's Fair being pointed to as an incentive which ought, and probably will, give this country a strong boom. The jewelry industry, so far from being dependent upon the very wealthy classes, gets its nourishment more from the bone and muscle of the country, although fashions and styles are powerful factors of success.

The opening up of the South affords a very profitable avenue for the trade, and a great deal more is expected from that direction. There has been a spurt in business to Buenos Ayres and Brazil, and some parts of Chili, within a year or two, and there has, withal, been a fair amount of export business done, but with somewhat indifferent success so far as the South Americans are concerned. Leading manufacturers, who have tried South American markets, report promising possibilities, but find that without a reciprocity treaty the best, or even satisfactory, results are not obtainable. The West is a great field, but the South is now looked to as a source of very large industry. The local trade has not fortunately been seriously affected by any recent failures, and while a few firms are believed to be on a more or less unstable footing, the jewelry industry in Providence appears to be in quite a flourishing condition.

With the decreasing business among the manufacturers there is a corresponding increase among the refiners and smelters, all of whom are running to their fullest capacity, while one or two are working nights. There are nine firms in this city engaged in the refining and smelting business. There are some jewelry firms in Providence whose floor sweepings bring them in at least $5,000 a year. Even the floors of jewelry manufactories are taken up and burned once in a while for the gold that is in them. The gold and silver which the refiners get in this way are sold by them back to the jewelers. The jewelry trade of Providence amounts to at least $10,000,000 a year, transacted by about 225 firms, and the annual returns which these firms receive from their sweeps is estimated to amount to upwards of $50,000.

A new feature in the trade in this city that has been developed to a large extent during the past year, is what is known as "stock work," which is made for the jobbers. These jobbers send these "stockmen" all sorts of articles to make. For example, they want six rings, each with a one karat diamond. In conveying the order the jobber encloses the six one karat diamonds in a piece of paper folded up, writing on the outside the brief directions that there are to be six rings, each with a single stone. The manufacturer's business thereupon is to make the rings, set the stones and deliver the goods as ordered.

The manufacturers in this city will start their salesmen on the road as soon after taking account of stock, about January 1, as possible. Some of these travellers make as many as ten trips in one year, covering a territory of perhaps 30,000 or 40,000 miles per annum. The commencement of a new year will herald numerous changes among the representatives of firms in Providence. Among these may be mentioned:

Alden C. Briggs, formerly with Bliss & Shepard, of Mansfield, Mass, now with F. A. Stevens & Co., Providence.

William W. Middlebrook, formerly with S. W. Gould & Co., Attleboro, to B. A. Ballou & Co., this city.

Martin V. Brady has severed his connection with Charles Downs, and will take the road for Hearn & Braitsch.

George Greene will carry Waite, Thresher & Co.'s line instead of T. E. Carpenter's as heretofore.

H. L. Martin, formerly with W. R. Richards & Co., is now in New York, representative for the Reynolds Jewelry Co.

B. Frank Snow will carry Bisbee, Swift & Co.'s and George L. Vose & Co.'s lines this season.

The desirability of establishing a watch factory in this city has long been admitted, and the opportunity now presented is one which should be seized upon and carried to a successful conclusion, and it is thought by many business men that with a little push this most desired object can be accomplished. Hiram Howard, of the firm of Howard & Son, has received recently a letter from Mr. Charles Rood, now of the Aurora Watch Company, stating that he will make him a visit in this city in a short time. Mr. Rood is a large stockholder in the Aurora Company, and is very desirous of removing the business to some eastern city. The concern is quite a large one employing 300 hands. It is expected that when the works are finally located and the business resumed, at least 1,000 hands will be employed, and of the very best class of help. This would mean an addition of several thousand to the population of the city in which it may be located and a pay roll of $40,000 per month. The possibilities of the watch business are almost unlimited, as is shown by the phenomenal growth of the American Watch Company of Waltham, that now employs about 3,000 hands, starting from a much smaller beginning than will be the case with the Aurora works. It is understood that Mr. Rood has very favorable ideas of Providence, and Mr. Howard thinks that it is merely a question of enterprise among the business men of this city whether this great plant will locate here.

The following business changes have been noted in this vicinity since last month:

W. H. Howe succeeds D. A. Needham at Woonsocket, R. I.; George N. Babington has removed from 35 Point street to 84 Orange street; Smith Bros. from 107 Friendship street to 31 Clifford street; Lawton & Co. from Pawtucket to 367 Mills street, Central Falls; Joshua Gray, after an occupancy of fifty years at 241 Westminster street, is about to remove to 319, same street; E. H. Dunham & Co. have removed from the second to the third floor of the Simmons

Building at 29 Point street, and will occupy the shop vacated by Barstow & Williams.

The following new firms have been launched in the trade during December: Wilson & Mason, at 18 Broadway, Pawtucket, for the manufacture of shell jewelry; R. O. Bissell, retail, at 29 Mathewson street.

The angel of death has paid the jewelers two visitations since my last letter and removed from the guild two gentlemen well known in the trade. Charles E. Bonn, travelling salesman for Andrew J. Wiley, manufacturing jeweler, 363 Eddy street, was found drowned in the Providence river, off Mowrey's lumber yard, on the morning of the 11th inst. The fact that the body bore no marks of violence does away with any theory of foul play, while, on the other hand, the unfortunate fact was established that the last moment up to which he can be traced alive is about Wednesday night, Dec. 10, when he left a down town saloon where he had been spending considerable time, saying that he was going home.. He therefore must have come to his death through accident or suicide. The deceased was 55 years of age, and a member of Arnold Post, No. 4, G. A. R. During the war he served in Battery C. 1st R. I. L. A. He enlisted in 1862 as a private, and rose to the position of first lieutenant. Upon his retirement from the service in 1864 he was brevetted captain by an act of Congress for distinguished bravery.

On Wednesday, the 17th inst., Michael W. Cuddy, of the firm of John T. Cuddy & Co., manufacturers, at 25 Calendar street, passed away after a brief illness. Mr. Cuddy was 30 years of age and was well and favorably known in the market. His funeral was solemnized from his brothers' residence on Friday.

With the exception of what is known as the Aldrich House fire in February, 1888, which swept away an entire square in the heart of the city devoted to manufacturing and business purposes, by which property valued at nearly $2,000,000 was destroyed and several jewelry firms came to grief, the destruction of the Dorrance block, bounded by Westminster, Dorrance and Middle street, on the afternoon of Saturday, December 13, involved the greatest pecuniary loss for a series of years. George H. Taylor & Co., watchmakers, and jewelers' supplies, occupied the second floor front on the west end with a stock valued at $150,000. They succeeded in removing costly portions of the stock, consisting of diamonds, watches and portable jewelry before the fire reached their premises. Their loss was $25,000, insured for $10,000. Only a narrow lane separated the seething mass of flames from the Hidden Building, mainly occupied by George H. Cahoone & Co., A. B. Day & Co., James A. Foster & Co., Joseph H. Fanning & Co., Ladd Watch Case Co., S. M. Lewis & Co., William Montgomery, Charles S. Pine & Co., E. B. Thornton & Co., and Darius Whitford. Fortunately, however, no damage was done other than the breakage of a few panes of glass. George H. Taylor & Co., have secured a new location at 146 Westminster street, Room 8.

Notwithstanding the stringency of the money market there have been no failures among the wholesale or jobbing trade, but a great surprise was created in business circles last Wednesday (17) by the announcement that George Owen, George Owen, Jr., Charles D. Owen ond Owen Bros., had made a deed of trust of all their real and personal property to Charles H. Merriman and Cornelius S. Sweetland, of this city, and Theophile King, of Quincy, Mass.

The gross indebtedness direct and indirect of Owen Bros. is about $1,000,000, with assets of shares in Atlantic and St. Croix Mills, St. Croix, notes and amounts due them from St. Croix mills on account of loans, and the real estate of George Owen, Jr. The value of these assets it is impossible to determine at the present time. The debts, direct and indirect, of Ceorge Owen, Sr. are $450,000 to $500,000, with assets in real estate and shares in banks, etc,, valued at about $160,000, shares in Atlantic and St. Croix mills, and small interest in the manufacturing jewelry firm of G. & S. Owen & Co. A large part of George Owen, Sr's. indebtedness is included in that of Owen Bros. on indorsements.

George Owen, Sr., the father of the brothers Owen, has always been considered the most successful manufacturing jeweler in this city, and is generally rated by men in the same business to be the wealthiest manufacturing jeweler the country has ever known.

He is eighty-seven years of age and started out in life as a blacksmith. He continued to follow this trade until about 1830, when, with his brother, Smith, he launched into the manufacturing jewelry business, with which he has been prominently identified ever since Their place of business was on President street, where they prospered to such an extent thas after a few years they erected a building of their own on Steeple street and moved into it, occupying a portion of it and renting the rest to other firms in the same business. This building is still standing, but passed into other hands several years ago.

He remained here upwards of fifteen years, growing richer and richer with each succeeding year.

Then he moved into the Hidden Building, at the corner of Dorrance and Broad streets. This was about 1855. Here prosperity continued to smile on him, and as he prospered he began to cast about for other investments. He purchased several pieces of valuable property in New York City, which have more than doubled in value since he came into possession of them. These he still owns, and are in themselves an independent fortune. Several years ago, he, with his brother Smith, who, up to the time of his death remained in business with him, built the large brick block at the corner of Snow and Chapel street and moved their business into it.

The jewelry firm of G. & S. Owen & Co., is now composed of George Owen, Sr., J. P. Snow, of New York, and Charles E. Westcott, of this city. For several years Mr. Owen has been gradually withdrawing from the firm, so that his interest therein is so small now that his present embarrassment will not affect that firm.

The New England Manufacturing Jewelers' Association held their annual winter reunion at Tillinghast's parlors on Westminster street, Friday evening, 19th inst., and a large attendance, numbering about seventy-four gentlemen, comprising all branches of the trade, including the brass founder, electroplater, engraver, and the manufacturer of gold and plated jewelry. President Edwin Lowe officiated as toastmaster of the evening and in a short speech welcomed the members and guests, concluding his remarks by a short history of the trade. Remarks were made by a number of the gentlemen present, among whom were Fred I. Marcy, Horace F. Carpenter, Joseph H. Fanning, P. F. Parsons, and Michael Fitzgerald, of this city, and E. Whitney, N. H. Prince, J. P. Bonnett, Col. Everett S. Horton, of Attleboro, and representatives of the press.

The meeting was called to order by the president, and session of short duration held. It was voted that the annual tax be $5 and a committee was appointed to revise the by-laws, after which the meeting adjourned.

The parlors were then taken possession of by some of the jovial gold workers who spent an enjoyable evening, social merrymaking, enlivened by songs and jokes. The Crescent Quartette was present and gave several selections, which were highly appreciated. The officers of the association were in activity all the evening looking out for the guests, especially President Lowe and the Executive Committee, consisting of John M. Buffinton, Frank T. Pearce and Henry Smith.

F. M. Mathewson, treasurer of the C. R. Smith Plating Co., of this city, will start about January 1, for a two months' visit to the West Indies.

Among Hamilton & Hamilton, Jr's. representatives are R. J. Fornaris, located in South America, and D. M. Neil, in the Russian and German Empires.

PAILLARD NON-MAGNETIC WATCHES

FOR THE HOLIDAYS.

The largest stock ever shown in this country of Complicated Watches, Repeaters and Chronographs. Ladies' Watches in fancy enameled and decorated cases; the finest and richest designs ever produced.

Dealers should send for selection package, giving references.

Non-Magnetic Watch Co. of America,

CHAS. S. McCULLOH, Receiver,

177 & 179 Broadway, New York.







A Complete History of Watch and Clock Making in America.*

[By Chas. S. Crossman.]

Number Fifty.

Continued from page 66, December, 1890.

CHRISTIAN BIXLER, EASTON, PA.,

HE WAS born in Berks County, in 1763, and served his apprenticeship with John Keim, of Reading. He worked a short time as journeyman and then settled in Easton, in 1785, where he made clocks until 1830. In that time he made nearly eight hundred clocks, doing the casting and the greater part of the forging himself ; that is doing it in his own shop under his superintendance. In 1825, his son Daniel L. Bixler commenced his apprenticeship with his father, and in 1830 succeeded to the business, which he continued as a general jewelry business, in connection with his brother, William Bixler, who was a silver spoon maker. The business is still continued by Mr. C. W. Bixler.

ISAAC GROTZ, EASTON, PA.

This man was born in Easton, in 1784. He set up as a clockmaker when a young man, having first learned the blacksmith's trade. He had a forge in connection with his clockmaking shop, which enabled him to do most of his casting. He continued to make clocks up to the time of his death, in March, 1835, which occurred as the result of a cold he contracted while out setting some of his clocks a few weeks previously. It was his custom to go out with an ox sled in winter to deliver the clocks he had made.

GEORGE BUSH, EASTON, PA.

He was an apprentice of Christian Bixler from 1806 to 1812 when he started in business for himself as a clockmaker. Besides making the usual highcase clocks, he made what was called the hanging half case clocks which were about one half the size of the others. He also dealt in materials as far as dealers handle them for high case clocks. He discontinued business in 1837 and died in 1843.

ABRAM MILLER AND JACOB ROBERTS.

The first named went to Easton in the early part of the present century and was quite successful as a clockmaker, continuing in business for about twenty-five years. The latter was an apprentice of Christian Bixler, but never attained any great success. He was a contemporary of Abram Miller.

JOHN FESSLER AND SUCCESSORS.

John Fessler may justly be considered one of the pioneer clockmakers outside of Pennsylvania. He was born in Switzerland and came to America with his parents who settled in Lancaster, Pa., in 1760. He was afterwards apprenticed to the clockmakers' trade. By the time of the Revolution he had finished the clockmakers' trade but he preferred to fight for the liberty of his adopted country rather than to make clocks. He became a regimental officer and remained in the army until 1782 when he settled in Fredericktown, Md., and commenced business for himself. His clocks were soon in demand, as they were of a finer class of workmanship than most of the productions of the time. In a few years he found himself with many orders for his clocks, from southern planters and others who could afford such a luxury as as a clock. They all had dead-beat escapements which of course indicates that the movements were of fine workmanship. His son John, Jr., was an apprentice and after the death of the father, in 1820 he succeeded to the business which he carried on successfully for many years. The business is still carried on by a descendant of John Fessler, as a retail jewelry business. The clocks of the elder Fessler are much sought after by dealers and purchasers of antique clocks, not only for their superior movements but for their massive cases which were always of the finest workmanship, and artistically carved.

John Meyers, of Fredericktown, Md., was a clockmaker who located there as early as 1793. He made an extra quality of clock and obtained something more than a local reputation, although he made but comparatively few clocks. He continued until 1825.

Valentine Baugh, Abingdon, Va., was a nephew of John Fessler, Sr., and was undoubtedly an apprentice of his. as nearly all of his clocks have the Fessler pattern of case. He made clocks to a limited extent, from 1820 to 1828.

DAVID D. ANDERSON,

Was born in Enfield, Conn., in 1792, and from there he went with his father's family to the vicinity of Rome, N. Y., serving his apprenticeship for seven years at Utica, during which time he learned watch repairing, spoon making and jewelry making. In the winter of 1817 he went to Marietta, Ohio, and started in business. and in 1821 he commenced clockmaking, as he found a demand for clocks. He labored under great disadvantages as there was no brass foundry nearer than Cincinnati, which was three hundred miles away by river, and there was no competent worker in steel in his vicinity ; but with a versatile mechanical genius, he made his own patterns, casted the brass and forged the pinions and other steel work. He succeeded in making and finishing in a workmanlike manner quite a number of clocks. He, however, abandoned this branch of business after two years, owing to ill health, and only carried on a watch and jewelry business in a small way.

JAMES ROGERS, NEW YORK CITY.

While New York had but few clockmakers it could boast of one quite prominent maker in James Rogers, who was born in Scotland in 1801, and came to New York in 1822, as soon as he had finished his apprenticeship. He started in business on Chatham street where he remained about three years, and then his father who was a clockmaker, came from Scotland, and the business was moved to 410 Broadway, near Lispenard street, where Mr. Rogers resided and had a shop in the rear. He remained there many years, bought the property and erected a new building in 1840. In 1854 he moved his family further up-town and rented a shop on Broadway, near Canal street. He later moved to the corner of Fulton and William streets, where he was in business at the time of his death in 1878. James Rogers made many high case clocks of the better grades, but his specialty was tower clocks, as he made over fifty of these during the time he was in business. His most notable clock is the one now in Trinity Church steeple, which he made in 1847 at the time the present Trinity Church was erected. The clock with all its appurtenances weighs over seven tons. He also built the clock in the front end of the Grand Central Depot in New York City, and many clocks for vessels. He was the first manufacturer of Morse telegraph instruments. He amassed a comfortable competence. His son H. W. Rogers, succeeded to the business which he still carries on in a small way in Fulton street.

JOHN STOKEL.

John Stokel, of New York city, was a maker of regulators with Graham escapements and second pendulums which were really quite fine in finish. He commenced in 1820 and continued until 1843 when he died of a paralytic stroke while in the shop. His business was continued by his son for a short time.

* Copyright by Chas. S. Crossman, 1885.

NONE OF IT IN HIS SOUL.

Angry Advertiser—If you think I'm going to pay you for this ad. you're mistaken.

Advertising Clerk—What's the matter with it?

"You promised to put it next to reading matter, and you've got it right alongside a column of poetry."—*Chicago Tribune.*

The History of the Balance Spring.

IT WAS evident that the pendulum could not be used for watches, and the thinking mind saw that some other force than that of the attraction of the earth was necessary. There are three men to whom the honor is ascribed of having invented the balance spring—Robert Hooke, Huyghens and the Abbe Hautefeuille. The latter used in the middle of the 17th century a hog's bristle, one end of which was fastened to the watch plate, while the other end acted on a pin fastened to the balance.* He soon replaced the bristle with a feeble straight steel spring; these several contrivances, as well as a serpentine-shaped steel spring (see illustration) did not satisfy him; nevertheless on these grounds he laid claim to having invented the balance spring.



Let us, however, not confound these essays with the real invention; we have therefore to choose between only two: Hooke (1635–1703) and Huyghens (1629–1695). As both were equally ingenious and capable, it is very possible (because similar well-authenticated occurrences in the history of inventions affirm the assertion) that the two made the same invention simultaneously and independently of each other.

Montucla remarks in his "History of Mathematics," that in case Dr. Hooke, the contemporary of Newton and Huyghens, was the inventor of the balance spring, he could not explain to himself how so important an invention remained, as it were, buried in the papers of the scientific Englishman, while the adoption of this new auxiliary entirely revolutionized the art of horology in France." Although, generally speaking, this remark is well founded, still it is not sufficiently momentous to use it for deciding an important historical question. History is full of such instances. Beside this, there are other facts speaking in favor of Dr. Hooke.

The celebrated principle of Hooke *Ut tensio sic vis* (as the tension is so is also the force), had its origin in the investigations which this scientist instituted on the nature of springs which appeared in print in 1679. He was so firmly convinced of the importance of his invention that he believed himself sufficiently capable of constructing a timepiece with which to solve the all-important problem of ascertaining the longitude. He associated himself with a few enterprising men in high positions in order to take out a patent; the conditions, however, required of him were so distasteful that he resolved to let the matter rest for the time being. But it became soon public and several London watchmakers shortly afterward constructed pendulum clocks in which the balance spring was employed. Afterward, several French watchmakers disputed among themselves the claim to the priority of the invention, but it is said that documents are still extant showing that these watchmakers were in connection with the same persons who had formerly intended to associate themselves with Dr. Hooke.

As regards Huyghens, Turel, of Paris, constructed in 1674, a spring clock according to his details. Huyghens imagined that in the balance spring he had without further trouble discovered the means of making accurate going clocks. But in this condition the balance spring was still very far from making the vibrations of the balance isochronous, because the same is true for both spring and pendulum. The arcs of oscillations of different amplitudes are not of the same duration.

The watchmaker, Jean Jodin, of St. Germain en Loye, had as early as 1754 expressed the idea that it was possible to make the balance spring isochronous. Pierre Le Roy and Ferdinand Berthoud, two French watchmakers, however, were the first who instituted exhaustive experiments on the subject of isochronism. Pierre Le Roy, in the year 1766, recognized the fact that a very short balance spring, equally thick throughout its entire length, is by the vibrations of the balance stretched in a far greater proportion than a longer one; the longer arcs of vibration are consequently accomplished in a shorter time than the smaller. A very long balance spring, on the other hand, is by the like vibrations stretched far less or in a far smaller proportion than the former, and the larger vibrations are thereby accomplished slower than the smaller. But between these two lengths there is a medium length, the larger and the smaller vibrations of which are of equal duration.

According to Le Roy, it was the principal problem of the watchmakers to find the medium length, which formed the basis of isochronism. Ferdinand Berthoud's method of making the balance spring isochronous was based on an entirely different principle, since he produced isochronism with the shape of the spring, but not with its length. Berthoud made the spring coils proportionally thinner, something like a whip cord, the farther they were removed from the center. By this means, also, a shorter spring could become isochronous. The axioms of Le Roy and Berthoud were for many years regarded as the exclusively correct ones for producing isochronism.

Toward the end of the 17th and at the beginning of the 18th centuries watchmaking had already become a subject of scientific research; astronomers and mathematicians occupied themselves with it, and watchmakers began to acquire the scientific knowledge necessary in the performance of their calling; for this reason the progress of the art has been so great in this century.

We observed, therefore, that in the 17th century three scientists claimed each, or history did it for them, the honor of the invention of the balance spring. The papers of these three men, Hooke, Huyghens and Hautefeuille, also attest that the latter (1674) noticed first that a spring attached to a balance would make its vibrations easier and more regular, without thinking, however, of fastening this spring on the axis of the balance and to make it spiral. The proposition of Hautefeuille to make the spring serpentine or undulated is mentioned by Moinet; Romilly ascribes this idea to Lahire. Hautefeuille was also the first to propose the use of the helical spring, but very likely for want of technical knowledge, he made but a faulty application of the idea.

In the year 1776, J. Arnold used the cylindrical spring for his chronometers, and took out a patent for it in 1782. He curved the the last coil to the center. "These endeavors," say the letters patent, "have the property of making all the vibrations of the same duration."

* Others state that the bristle of the oldest portable watches was in its middle fastened upon the watch plate; both ends were bent upward at a right angle and between them moved to and fro, one arm of the spoon-shaped balance lightly banking against the bristle, the elasticity of which forced it back again.

To Cast in Fish Bone.

HEINRICH SCHULTZE says in *Der Goldschmiedekunst* that the manner of casting in fish bone has been explained repeatedly in that and other technical journals. It will, however, have happened occasionally that the cast has not turned out well, a circumstance readily induced partly by the way of pouring and again by the condition of the mold. Brass foil is sometimes recommended for producing a compact cast; indeed, it is very good, but the copper percentage of the alloy is increased unnecessarily, since the zinc only influences the compactness of the ingot. For about 80 parts 14 karat gold, or 50 to 60 parts 18 karat gold—the same proportions hold good for silver—1 part good pure zinc sheet rolled together, dipped in sal ammoniac water or soldering fluid, heated and immersed into the clear molten metal, does the same services and does not alter the nature of the alloy as it evaporates again.

A bad cast is caused both by pouring when too cold or too hot, as well as by a bad mold. After the mold has been made ready and provided with air ducts and hole for casting, and when ready to be

laid together, take a camel's hair brush and coat everything with a concentrated solution of borax or boracic acid; after the lapse of a few minutes, when the surface has become fairly dry, repeat the coating, this time, however, taking a concentrated solution of water gloss, either diluted one-half with water or borax solution; do it as carefully as possible, so that no small lump remains adhering anywhere, or in order not to injure the sharp corners; then dry over a small lamp, place together and lay the mold where it is warm. If wood cores are to be laid in, they are each separately laid into the water gloss solution, and after drying, are placed into the mold.

It may perhaps not be known to everybody how it is possible to cast holes in a certain object, for instance, the bezel hole of a ring. The pattern for it is fully finished, and the more perfectly it is smoothed and burnished the nicer will be the cast. When the corresponding holes have been cut in, fit into it a wooden mold of the requisite shape—round, square, oval—but in such a manner that it projects a few millimeters so that the plug, after the ring or model has been removed, may again be laid exactly into the imprinted place; these projecting parts are then slightly rounded off in order to be inserted and withdrawn readily. Now bind the mold together and carefully close the casting hole with silk paper; drive also some of it between the sides in case they should stand together with only little hold; then place the model obliquely into a small vessel filled with fine sand, so that the former is filled nearly as far as the opening. The sand may also be heated previously, or else the vessel may be heated afterward to a degree borne by the fish bone, both for the purpose of drying them and expelling the air as much as possible. When the metal is clear and ready for coating and the operator is certain that the mold is thoroughly dry, pour. Experience makes the expert, and experience is necessary to know the right time when to pour. If the metal is too cold the cast is faulty; if too hot, it becomes blistery; it may also occur that the cast looks to be nice and smooth, but when worked places cave in caused by holes and blisters within. Therefore, remember: first, a good heat, next, have the crucible closely before the mold, and as soon as the brightness of the molten metal disappears and a film is about to form on it, cast quickly, and my word for it you will cast with as much success in fish bone as you will in sand. The placing of the mold in sand is for the purpose of preventing the running through of the metal.

Care of the Eyes by the Watchmaker.

IT HAPPENS occasionally, while turning, that a splinter of the metal will fly into and firmly lodge in the eye. Never try to expel it by rubbing, as that simply irritates the eye and drives the chip still further into it. It is better to draw the upper lid over the lower, so that when returning to its place the lid slides over the lower eye lashes which will sweep it clean, as it were. This process will, in the majority of cases, suffice to remove the splinter or other foreign body; if not, the object may be gotten out with a strip of white paper or a camel's hair brush. Never, however, let anyone use a hard instrument; if the case requires this it is most advisable to send for or go to a physician.

While on the subject of the care of the eye, in which every watchmaker is interested, THE CIRCULAR remembers that several years ago a very eminent German watchmaker, B. Morgossy, addressing his fellow-watchmakers, said that he would most urgently recommend a very efficacious and at the same time simple remedy which he has used for a long time with the happiest results, to those who have strained their eyesight by very delicate and long-continued labor with the magnifier or by long reading in unduly bright light, and suffers with weakness of the eyes, or occasionally have a trembling of vision—to wit, spirits of lavendar, to be obtained in every drug store. It is to be used as follows: To two parts spirits of lavendar add one part clean river, spring or distilled water from the drug store, and after every fatiguing work with the magnifier and in evenings before going to bed, as well as in the morning after washing with lukewarm water, rub with a moist linen or cotton rag, on the eye-brows as well as forehead, but at least one-half hour before going out into open air; in case of complete weakness, use it five or six times. He recommends the daily application of this fluid, especially to those who suffer with weakened eyesight, and are compelled to labor or read for a long time every day. Moreover, when working by the assistance of a lamp, a dark blue or green paper upon the bench should always be substituted in place of the white one; the eyes are greatly relieved thereby.

The above article was written in answer to a question in the *Uhrmacher Zeitung*, asking for advice as to how to strengthen weak eyesight. THE CIRCULAR might as well publish several recipes. One correspondent says that a professor recommended him in 1867 to use bi-concave No. 30 feebly blue spectacles, and at the same time bathe forehead and temples with a mixture of ol. balsam 8.0, spir. lavendel 120.0. He has used this remedy diligently, and his eyes have become so strong that he has dispensed with the use of spectacles since 1873. Repeated tests of his eyesight with the optometer have resulted in "No spectacles necessary." Another recommends spirits of fennel seed, mixed with distilled water, as an excellent lotion for the eyes. "I commenced to suffer with weakness of sight about thirty years ago, since which time I still employ it up to to-day with excellent results." There was a certain patent medicine which really possessed remarkably curative powers; it was analyzed some time ago and the result published was as follows: Fill a good sized bottle three fourths with absolute alcohol, put into it enough of fennel seed to fairly fill the bottle, cork it and let it stand for several days in moderate heat, until the alcohol has colored green; then decant the clear fluid and mix it with a little ethereal oil of fennel from the drug store. For use employ a second bottle, in which pour to one part of this essence five parts of distilled water or filtered river water and shake the mixture well, by which it changes into a milky fluid. With it moisten a linen cloth and wet the parts around the eyes morning, noon and night. It does not hurt if a little enters the corner of the eye. For continued use it may be taken a little stronger; should it bite at first dilute it a little more.

To Toughen Brittle Gold.

IF THE gold ingot shows sufficient ductility to withstand the first two or three annealings without creaking, it may be considered as sufficiently tough for being worked; if, however, it cracks, recourse must be had to a sort of mold casting, what the French call "brassage." This process is performed by taking a soldering coal sufficiently large to receive the ingot. It is prepared for the purpose by working with a file, a half round hollow in it. The ingot is then heated upon a coal to nearly white heat, is laid in the hollow of the prepared coal, and covered with borax everywhere to facilitate the melting; direct the flame of the soldering lamp with a heavy wick upon it, using a long blowpipe; maintain the flame until the surface begins to melt, whereby all the cracks disappear, without raising the temperature sufficiently, however, to either shorten the ingot or separate it into several pieces. The necessary degree of heat will be recognized as soon as the bar begins to give way and conforms to the smaller angles of the coal, as well as by the rainbow hues that begin to appear upon its surface, and finally by the disappearance of the cracks. When the ingot has reached this degree of heat throughout, the operator may be assured of its malleability.

Problems in the Detached Lever Escapement.

BY DETENT.



HAVE NOW given in this series of articles, instructions for adjusting to heat and cold, isochronism and position, but these instructions have been continued through some six or eight contributions. I now propose to condense these instructions into one article so that the readers of THE CIRCULAR can have the advantage of concise instructions on this subject to which they can refer. I would beg the reader, however, to read carefully the instructions given in former numbers for the reason that in those contributions the subject was treated more in detail, and I also explained the causes of certain phenomena which are developed in the processes of adjusting.

In the present contribution I shall be, as it were, more empirical, and give specific directions for doing certain things without stopping to explain the reasons. I shall divide the methods into three parts viz., heat and cold, isochronal and position adjustments.

HEAT AND COLD ADJUSTMENTS.

In speaking on this subject we are apt to treat the matter as if *cold* was a phenomenon by itself, the word expressing only the condition of parts and things when the stimulus of heat is withdrawn. There are several methods by which the varying effects of temperature can be overcome, but at present I shall only consider the ordinary compensation balance as shown at fig. 1. Let us first briefly consider the mechanical means afforded by this balance for correcting "temperature errors." We all know that in watches

FIG. 1

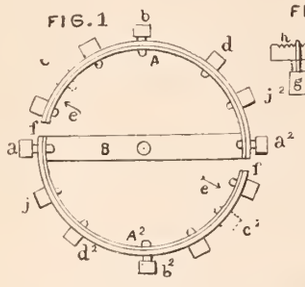
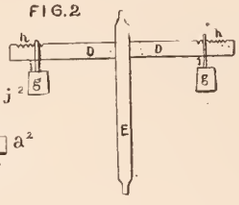


FIG. 2



without such correction the tendency is to gain in cold and lose in heat To obviate this we provide a composite balance rim made up of two metals (brass and steel) arranged so that a change in temperature causes a change in the diameter of the balance. It is well known that if we take two balances of precisely the same weight but varying in diameter, the one with the larger diameter will run slower with the same balance spring. This is illustrated in fig. 2, where I have shown one of the most primitive of the controlling powers applied to the measurement of time. In this escapement *E* has a vertical axis carrying two arms *D D'*, on which arms were placed two weights *g g*. These weights were suspended by two loops *i i* which engaged notches shown at *h h*. The arbor or axle *E* was actuated by a crown wheel precisely as in the old verge watches, giving the arms an alternating rotary motion, the velocity of said motion depending on the distance at which the weights *g g* were placed from the center of the axis of *E*.

Now, in the compensation balance the brass lamina of the composite rim of the balance contracting more than the steel on the fall of temperature causes the segments *A* to deflect outward in the direction of the arrows *e e*, producing the same effect as shifting the weights *g g*, fig. 2, outward. To apply our theory we place our watch movement after timing in normal temperature (75° F.) in a cold box and note the change in rate. For illustration in the present instance we will suppose we find the watch to gain on the rate it showed in ordinary temperature. This result shows that our balance is not sufficiently compensated, and that we must place a pair of our screws so they will be more affected by the deflection of the segments *A A*. Practically we take the screws *d d²* and place them nearer the cut ends of the balance, as indicated at the dotted outline *c c²*.

The segments to the balances of all well made watches in this day are supplied with a number of holes in excess of those really occupied by the necessary screws, and by changing these screws in a judicious manner very fine changes can be effected, as, for instance, if we find our watch still gaining a trifle in the cold box, we change the screws *j j²* to the positions occupied by *d d²*. It should be borne in mind that *screws should always be changed in pairs* so as to preserve the poise of the balance, and also have the screws in each segment the same relative position, as, for instance, if we have three screws near the cut end of one segment we should have the same number of screws in a like position in the opposite segment.

ISOCHRONAL ADJUSTMENTS.

If a flat balance spring, see that the spring is true in the flat and true in the round; lay the movement flat, wind half a turn to establish a short vibration of the balance, say, about three-fourths of a revolution; compare carefully with some precision timepiece—a standard clock is best—and note the rate for 12 hours. The movement should be wound every hour, only as much as it has run down in that time. We notice carefully the rate. If we find the movement to gain on the average daily rate it tells us the short vibrations are the quickest. We make a note of the variations, say, as follows:

Movement No. 3,446,294.
Normal rate 4″+ for 12 hours.
Short vibrations 13″+ " " "

We then wind the watch fully up, and it should then have a revolution and one-half and should be compared again for twelve hours, winding as before every hour and making note as follows:

Movement No. 3,446,294.
Normal rate 4″+ for 12 hours.
Long vibrations 17″— " " "

Here we have the long vibrations too slow and we must seek to quicken them. The short vibrations should be about 7 or 8 seconds the quickest, but in the cited instance they are 21″ too slow, and we must devise to quicken the long vibrations 13″ in 12 hours. How to do this, you ask. We have several ways to accomplish this; first we let out the balance spring a little, that is, if the spring is pinned in on the line of "*attach*," which means the inner end of the hair spring, enters the collet when the balance is at rest exactly opposite the point where it is pinned into the stud. If we can see no relation between the points of attach we can quicken the long vibrations by substituting gold screws (of the same weight) for brass and platinum for gold; in this way we lessen the atmospheric resistance of the balance, particularly in the long vibrations. We can also quicken the long vibrations by closing the curb pins in the regulator. If the pins are already as close as they can be, reduce two opposite balance screws in weight so as to throw the regulator toward "slow" and then open the curb pins a little. The effect of this is that the curb pins affect the short vibrations but little, while they control and quicken the long ones. It will be seen that we have three resorts in our hands to quicken the long vibrations, and it is evident that if we wish to lengthen or increase the duration of the long vibrations we must take the opposite course. But it is seldom we need in flat springs to slow up the long vibrations, usually the great difficulty being to get the long vibrations quick enough. How to manipulate Breguet springs will be considered in our next interview.



RESTITUTION.—A peculiar case was disposed of recently in the Queens' Bench Court of London. It will be remembered that a large theft of jewels of the value of $25,000, was committed by burglars at the store of Carl Thomas, in Munich, in 1888. The burglars, Allen and Davis, were, last June, arrested in London, and a large part of the property found on them. The court decided on the claims made by Thomas to the English and French bank notes found in Davis' house, and claimed by his wife as her property. The woman asserts that the larger part of the jewels and £1,000 were presented to her by Allen before her marriage. The court decided that she should keep the notes, but the balance of the money as well as the jewels be delivered to Mr. Thomas, and that the defendant should only pay her attorney. Mr. Thomas also received a judgment in his favor against the burglar Davis, with whom £2,400 in bank notes and money had been found.

MORE TURQUOISES.—According to the Russian paper *Nowoje Wremja*, a Mr. Obrutschew has discovered a mine of excellent turquoises in the vicinity of Samarkand.

FOUCAULT'S PENDULUM EXPERIMENTS.—The famous pendulum experiments, instituted years ago at the Pantheon, Paris, by Foucault, to visibly demonstrate the rotation of the earth will be renewed on a much larger scale. For this purpose, a pendulum, certainly the most gigantic that ever existed, has been located in the Eiffel Tower. It consists of a bronze wire, 115 meters long, attached to the center of the second platform, and descends to within 2 meters of the ground. To this wire is suspended a steel ball weighing 212 pounds, and furnished with a metal tracer. Mr. Mascari will be in charge of the apparatus.

MORE STANDARD TIME.—A bill has been introduced into the French Chamber of Deputies, for the purpose of adopting the standard time of Paris, for the colonial possessions in Corsica and Algiers.

HONORS.—Henry Lepante, watchmaker, of Paris, France, has been appointed a Knight of the Legion of Honor.

SMALL WATCH.—The *Journal Suisse d'Horlogerie* stated some time ago, that the 9 line (Swiss caliber) watch exhibited by Patek, Philippe & Co., at Paris, last year, was the smallest watch ever constructed. Objections are made to this statement from the fact that at the Universal Exposition at Paris, in 1878, "J. Meylan-Truan & Fils, of Sentier, Switzerland, exhibited one of 8 lines."

A LAW SUIT ABOUT A DIAMOND.—A correspondent of a German paper reports the following. The Court at Kimberly, South Africa, will in a short time have to decide on the ownership of a diamond. In October, 1889, a certain N. Wilh. Pentz came to the Detective Office at Kimberley, and asked permission to sell a diamond which he had carried on his person for 20 years, without suspecting its character and value. On being interrogated, he stated that he had received the jewel from his former sweetheart, who at that time lived at Heidelberg (Cape Colony); neither the giver nor he had known the value, and only now a few old gold diggers had told him that the stone was a genuine diamond. The police authorities of Kimberley retained the jewel, and instituted inquiries after the present whereabouts of the lady. They were successful finally in tracing her. She acknowledged that she had known Pentz in her youth, but could not recall the giving of the stone. Her sister suddenly appears and says that she herself had given the stone to Pentz, and that she had found it on her mother's farm. Pentz demands the restitution of the diamond from the Detective Office, and the sister the "acknowledgement of her claim," as the correspondent says, which may either mean to force a marriage, or else to obtain a part of the value of the diamond. A decision is soon looked for. The diamond is of a rose color, weight 87½ karats, and is worth about $9,000.

REMARKABLE DIAMOND.—A remarkable diamond was recently found at the De Beers Mine. It actually consists of two pieces, one of which weighs 19½ karats, the other 25½, and its shape is very interesting. Both parts are united and are of a light brown color. A person, not a diamond expert, would take it to be a piece of brown quartz, but for all that, the stone when cut will be worth fully $2,000.

THE LARGEST BAROMETER.—According to a French exchange, the largest barometer in the world is in Paris, in the tower of St. Jacques. It is 12. 65 meters [1 meter = 3 feet 4.08 inches] long; it was made in St Denis and from there carried to its destination by six workmen, inclosed in a wooden frame. The room in the tower is 40 meters high. The making of the tube, 2 centimeters in diameter, caused great difficulties. It is filled with colored water, protected against evaporation by a layer of oil. The barometer is used for experiments on a large scale.

BIRTHDAY PRESENTS.—The Marshal's baton presented by Emperor William to Count v. Moltke on his 90th birthday, is a rod about 60 centimeters long and from 3 to 4 centimeters thick. The actual rod is covered with dark blue velvet, ornamented throughout its length with golden Imperial eagles and royal crowns; at the upper and lower ends, the baton is edged alternately with rings of pearls, diamonds and rubies and contains the dedication, "Emperor William II to the General Field Marshal, Count v. Moltke, on his 90th birthday." A gold wreath of laurels and oak leaves is laid in between. The rod is surmounted by an eagle with the Imperial crown of diamond, upon a white enameled ground, surrounded with a wreath of rubies, while the lower end is a white enameled plate containing the monogram W. R. and crown set around with diamonds. Roses of sapphires of a rare fire and beauty also adorn this lower plate. This baton is hollow so as to receive a document, in which the monarch expresses his high gratification at the fidelity and devotion of the Marshal.

REVEREND THIEF.—The circumstance that a priest in Italy was condemned to 9 years penitentiary for common theft is rather strong for Italy, where the merry life of those of monastic inclination has long been a theme of common remark. As elicted at the trial, Don Domencio Maggio, canon at Catario, and Dr. Vizento Motta, of the same town, were accused of having stolen from the cathedral there two exceedingly precious jewel adorned monstrances, made by Bervenuto Cellini and to have sold them to somebody unknown. The canon was released for want of proof, while Dr. Maggio was convicted of the theft and sentenced to 9 years imprisonment. The two monstrances which have perhaps disappeared forever, were valued at 500,000 francs.

"LEFT HANDED" COMPLIMENTS.—A correspondent of the *Goldschmiedekunst* complains that at a certain national exhibition, the goldsmiths from Bremen, Germany, received no awards. To quote the correspondent; "Cards in the show-cases, stated that the jewelry was manufactured according to designs furnished by the Bremen Trade Museum. To this may be owing the circumstance that the goldsmiths obtained no awards. The Bremen Museum is one of the most famous in Germany; still it is not in the position, like Hanau or Pforzheim, to have skilled and educated designers at its back. To the latter fact may also be due the reason that really capable designers give Bremen a wide berth, as by reason of the shortsightedness of the manufacturing jewelers there, designers do not receive just reward for their labors, either in a pecuniary or a social respect. The salary of a designer is almost considered like so much money thrown away, and not the mental but the physical originator of a piece of jewelry is anything like reasonably paid."



To Tighten a Cannon Pinion.—The best way to tighten a cannon pinion is to take the pinion and place it between two files of medium fine cut, placing one file on the edge of the bench and the other in the hand. Place the center pinion between the files and run the file in the hand in a parallel direction with the stationary file over the pinion. This raises a little burr on the pinion, and does not bind it, and is sufficient to hold the cannon. Cutting around with cutting pliers is apt to bend, if not break the pinion besides to spoil both pinion and cannon in a little while if the watch is set often.

Half-Shell Foul of Wheel.—In the repairs of Swiss watches, the cylinder half-shell will sometimes be found foul of the wheel. In this case it will sometimes be found possible to raise the cylinder sufficiently by stoning down the brass setting of the lower cylinder end-piece, where there is much space between it and the jewel holes; at the same time it should not touch it, as in that case the oil would be prevented from entering the reservoir, and the pivot would run dry speedily. If this method is not available the cylinder notch can be lowered by either a ruby file or steel polisher and oilstone dust, resting the balance on either a piece of pith or cork, while doing so.

To Replace a Mainspring.—The repairs occurring most frequently are in mainsprings. Before proceeding with our remarks we would advise the repairer to always buy the best material, as it pays both the repairer and the customer. When you replace a spring, see if the breaking has not bent any teeth on the barrel or center wheel. See if the hook on the barrel arbor is not too long so as to break the spring you put in. If everything is right in your judgment select a spring of the proper thickness and width; wind it and put it in, taking care that the brace end does not stick through, so as to catch the center wheel or balance as it comes round. If these points have been observed you cannot help but have a good job

To Turn Glass in a Lathe.—Black diamonds are now so easily procured that they are the best tools for turning, planing or drilling glass, where much of this kind of work is to be done. With a good diamond a skilful workman can roughly turn a lens cut of a piece of flat glass in a few seconds, so that it will be very near the right shape. A splinter of diamond may be very readily fastened in the end of a piece of stout brass wire, so that it may be used for drilling or turning glass. Bore a hole the size of a splinter and so deep that the diamond may be inserted beyond its thickest part, but leaving the point projecting. Then by means of a pair of stout pliers, it is easy to press the end of the brass so that it will fill in around the diamond and hold it tight.

To Copy Design Drawing.—After the designer has made his drawing it often becomes necessary to make a copy, which can be done in the following manner: To make positive drawing, coat suitable paper with a 2 per. cent solution of bichromate of ammonia, to which a little grape sugar has been added, and dry in the dark. The paper containing the drawing is laid upon it and exposed to light until the prepared paper has assumed a gray color; now dip into a 1 per cent. solution of nitrate of silver, one-tenth of the volume of which is acetic acid. The positive image developed thereby consists of bichromate of silver, which becomes dark brown on drying.

Duplex Watch.—If in a duplex watch the balance holes are too large and the balance is brought into such a position as to bring it into closer proximity with the escape wheel, the long vibrations are sure to be quicker than the smaller for two reasons: first, on account of increased friction on the roller, and second, in consequence of the greater drop in the escapement. The difference caused by the greater or less drop will be the same whether the momentum of the balance is great or small, while that caused by the change in friction on the roller will be considerably influenced by the momentum of the balance. We also find if the balance holes are large, a considerable difference arises in the rate of going in the four vertical positions. The pressure of the wheel against the roller is never directed to the center of the pallet, but acts obliquely and if according to the position the balance is in, it becomes more or less so and cause a variation of friction in the pivots in the different positions; though it is less in amount than that on the roller, it is extremely inconvenient, as its variable effect can never be entirely compensated for. It is therefore of great importance in a duplex watch that the holes should fit exactly. When the escapement is set out of beat, the point where the vibrations are quickest does not correspond with the center of the arc of escape; and therefore such a change will have influence on isochronism; but of course this cannot or ought not to be done, as it would make the escapement imperfect.

Cleaning Agents.—In cleaning a watch, never use benzine or potash, or any potent article on the watch. Benzine leaves a greasy look which it is impossible to get off, and it destroys your oils, while the potash makes spots on the plates if in moist places. Pure alcohol for the bath and the chalk compound does the best work and gives the best results. The chalk compound is unequalled for cleaning the cases. With a stiff brush it is also excellent for cleaning jewelry.

To Fit a Jewel Pin.—In an article on watch repairing and cleaning, a correspondent gives the following advice for fitting a jewel pin: Take a jewel pivot, a roller jewel, as some call it. If it is broken off, I take my balance and carefully remove the hairspring with a pair of pliers especially made for this purpose. I then take my jewel pins, and get the size of the slot in the fork; when I have the right size, I light my alcohol lamp, heat the balance and roller over the flame, remove the old piece of the pin, take a piece of shellac that I have pulled out in a fine string about the size of a pin, and apply the upper side of the roller. I then heat again, pick up the new pin in my tweezers and put it in the hole, and while the shellac is warm set it square with the cross-cut and straight; then replacing my spring my job is done in less time than it takes to tell it.

Broken Pivot.—If a job comes in with only one pivot gone on the balance, put the balance in a split chuck and proceed to stone off the end of the staff square. Then take a graver with a fine point and center it nicely for drilling. If possible always make your own drills. A correspondent makes them of Sharp's best needles, which he considers better than wire. He draws the temper, files down to size, and hammers the end flat, shapes and sharpens it and then tempers it. Rosen is used for tempering, but we have all our own way for that. The drill being ready, the lathe is run at a slow speed and the operation commences. When you have drilled twice the length of the pivot, stop and clean out the hole thoroughly with a piece of pegwood. Then select a nice piece of Stub's steel wire, and getting the right temper, file down to size, making sure at the same time that you do not get it tapering. When you have it down to size, take a hammer and tap the end gently, until you get it down to the bottom, then turning down the pivot to size to fit the jewel and then finishing it the job is complete. In finishing first use a small oilstone slip to get a grey finish, and then use lime and crocus mixed on a square piece of boxwood, which leaves a fine finish on it.

The Archives Photographiques publish the following formula for a varnish useful for protecting designs, prints, photographic pictures etc: White gum lac, 32 parts; borax, 8 parts; carbonate of soda, 2 parts; glycerine 1 to 2 parts; water, 320 parts. Dissolve the borax and carbonate of soda in 100 parts water, then add the gum lac crushed, and agitate until dissolved completely. Filter, add the glycerine and 100 parts water. A precipitate will form in a few days which remove by either decanting the superratant fluid or by filtering. The varnish is then ready for use.

Neglected Problems.*

No. 2.—Part VII.

WHEEL AND PINION GEARING AS LEVERS TRANSMITTING POWER.

By "Excelsior."

(*Continued from Dec.* Circular, *page 82.*)

(This article has appeared in the January, July, August, September, October, November and December issues.)

NEW METHOD OF FINDING THE PROPER TOOTH OUTLINE FOR ANY WHEEL AND PINION GEARING.

The method of finding this curve for any proportionate sizes of wheel and pinion is specially illustrated by Figs. 39 and 40.† We will select for our example a pinion of 8 leaves and a wheel of 36

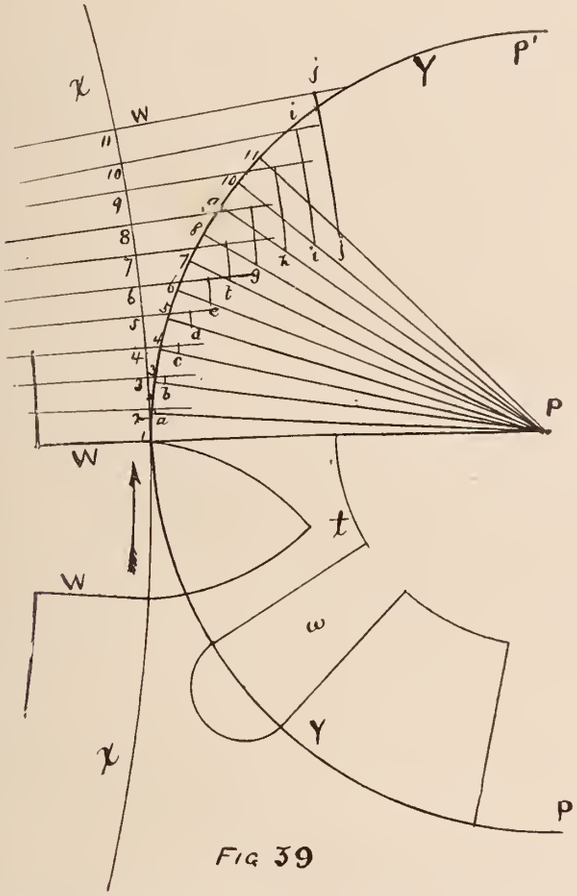


Fig 39

teeth. The wheel will be 4½ times the size of the pinion, or in the equivalent ratio of 9 to 2. Dividing the circle, which is 360°, by 36, gives 10° for the distance from the front of one tooth to the front of the next one, on the pitch circle of the wheel. One-half of this distance (5°) is given to the tooth, and the other half for the space between it and the next tooth. The teeth will each have a breadth of 5°, and the contact between it and the leaf it drives will continue through 10° of motion of the tooth—that being the distance allotted to each tooth. This contact should, if possible, begin on the line of centers, and continue 10° upward. I do not draw the tooth, because we are just now trying to find how it *should* be drawn. Following the above data, draw the pitch circle of the wheel, *XX*, and that of the pinion *YY*, in Fig. 39. Draw the line of centers *WP*, and another line from center *W*, 10° above *W1*, marked *W11* We will find the virtual radii of the wheel and pinion in ten positions. We, therefore, divide the distance from 1 to 11 into ten equal parts, or 1° each, and through these dividing points draw the lines *W2*, *W3*, etc., to *W11*, from center *W*. These lines represent the front of the tooth in ten positions, 1° apart. With the dividers still set to this 1° mark off an equal number of divisions on *YY*, and to these dividing points draw lines *P2*, *P3*, etc., to *P11*, representing the face of the leaf in ten positions corresponding to those of the wheel. These 10 spaces on the pinion will cover 45° and each space will be 4½°.

If you have no sector for measuring angles you can take the reverse course and divide off the pinion first. Draw a line from *P* to P^1, perpendicular to *P 1*. The distance along *Y Y* from *P* to P^1 is a quarter of a circle, or 90°. Set your dividers to measure $\frac{1}{20}$ of this distance, and they will span 4½° on the pinion pitch circle *Y Y*. With them so set, mark off 10 spaces, numbered as shown, and draw lines *P2*, etc., to *P 11*. These 10 spaces cover 45°, the distance allotted to each leaf. Without changing the dividers mark off 10 spaces on *X X* and draw lines from *W* through these dividing points, and mark *W2* to *W11*, as shown in Fig. 39. For each of these pinion radii, *P1*, *P2*, etc., you draw two perpendiculars,* and find the proper virtual length for each radius, as fully explained for Fig. 38. Measure this length from *P* on each radius and mark where it comes on each line at *a*. *b*, *c*, etc., to *j*. The points so marked are the places where the tooth should touch the leaf, in each position. My measurements give the following distances from *P* on the several radii, in inches and thirty seconds of an inch:

On line	*P11*,	*P10*,	*P9*,	*P8*,	*P7*,	*P6*,	*P5*,	*P4*,	*P3*,	*P2*,
It is	$1\frac{20}{32}$,	$1\frac{24}{32}$,	$1\frac{27}{32}$,	$1\frac{31}{32}$,	$2\frac{2}{32}$,	$2\frac{4}{32}$,	$2\frac{6}{32}$,	$2\frac{7}{32}$,	$2\frac{9}{32}$ scant,	$2\frac{9}{32}$
From *P* to	*j*,	*i*	*h*,	*g*,	*f*,	*e*,	*d*,	*c*,	*b*,	*a*.

The columns read downward. For instance, on line *P3* it is $2\frac{9}{32}$ inches scant, from *P* to *b*, and so on.

Now comes a new and important step, the utilization of these marks or distances for determining the proper curve for the tooth. With *W* as a center, draw a curve reaching from this mark on each pinion radius up to the wheel radius of the same number. For instance, on line *P 11* the mark comes at *j*, therefore draw the curve from *j* on *P 11* up to meet *W11* at *j*; from *P 10* at *i* draw a curve to *W10*, and so on with all of them. While your drawing pen is set to the proper distance for each of these curves in Fig. 39, draw

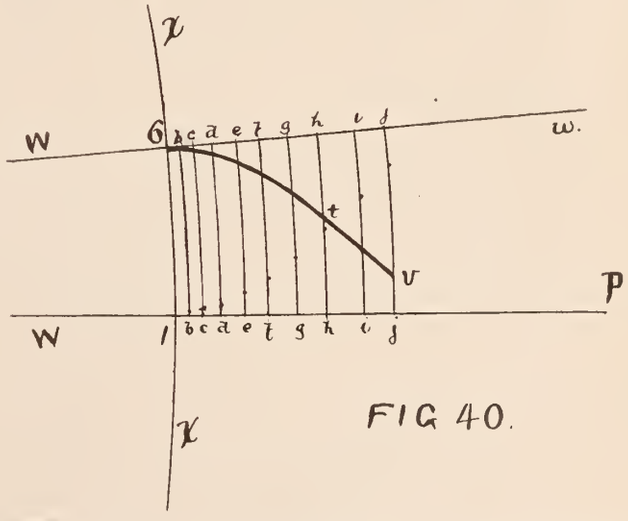


Fig 40.

* Copyrighted 1890, by Jewelers' Circular Publishing Co.

† Figs. 39 and 40, if shown complete, would be over a foot long, from *P* to *W*. It is, of course, impossible to get the whole on the page, and I therefore only give a portion at the end which includes the pinion *P*. The reader will please remember that whenever *W* is mentioned it is really located outside of the cut, and all lines which are drawn towards *W* as a center are understood to be marked *W* and to be many times longer than they are shown. For instance, it is really five times as far from 1 to *W* as it is from 1 to *P*, although it is not shown so. An inspection of Fig. 35 will give a correct idea of the form which these figures would have if given in full, as drawn.

*These perpendiculars are easily and quickly drawn by using a draughtsman's T square. I do not show them to avoid filling up the drawing. Make very fine lines in drawing, and in measuring or dividing off be careful to set the points of the compasses exactly on the lines. Draw first with sharp pointed pencils, and if correct go over it with ink. It is also best to measure by a scale marked decimally, so that you can work to $\frac{1}{100}$ inch or closer. These Figs. are drawn to the nearest $\frac{1}{32}$ inch, and are not so exact as with decimal measurement.

When setting the dividers for Fig. 39 measure with them from 1 up to P^1 to see if the last measurement of the twenty brings the point precisely on P^1 and do not stop till you have them set exactly right, for everything here depends upon exactness. Then make a couple of pricks with the points at one side of the drawing, to serve as a standard for their proper distance apart. While at work test the compasses frequently by these pricks, to see whether they are still properly set, as they are easily moved.

a similar curve in Fig. 40. For instance, with the compasses set to draw *j j* in Fig. 39, draw the curve *j j entirely across* Fig. *40* as shown. This Fig should have been previously got in readiness by drawing lines *W 1 P* and *W 6 w*, and curve *X X* from the center *W*, precisely as in Fig. 39. The distance between these two lines (between *1* and *6*, on the curve *X X*) is 5°, the breadth of one tooth, as in Fig. 39. In the same way draw all of the curves, first in fig. 39, then in Fig. 40.

We are now ready to transfer to Fig. 40 the distances which will give us the desired outline of our tooth. Beginning at *j*, on the line *P 11*, we measure the distance from it to *j* on *W 11*, along the short curve, and transfer this distance to the short curve *j j* in Fig. 40, measuring from the line *W w* downward and mark where it comes at *v*. In the same way take the distance from *i*, on *P 10*, to *i* on *W 10*, and transfer it to the curve *i i* in Fig. 40. Do the same with all of these short curves, making a minute dot or cross mark where this distance comes on each curve. The idea is to measure the difference between a tooth with straight radial sides and one with its point so curved as to touch the leaf at the proper point, at a number of places along its length, and transfer this difference to the blank tooth in Fig. 40. In the case of *a a*, between *P 2* and *W 2*, the distance is too small to be plain in this Fig. and I omit any curve for *a a* in Fig. 40, but the reader can make use of it in his own drawing. A line joining these cross marks from *6* to *v*, will give the desired curve for that side of the tooth, for the entire 45° of contact on the leaf.

It is evident that if measuring these distances downward from *W 6 w* gives the upper side of the tooth, measuring the same distances upward from *W 1 P* will give the other side, as is shown by the cross marks running from *1* upward. I do not connect them by a line but leave them so, to show the process more clearly. The reader can do that for himself, and it will then be seen that the two sides meet and form the end of the tooth at the point *t*. A tooth with a point having the form thus obtained is shown below the line of centers in Fig. 39. It is, therefore, impossible for the tooth to drive the leaf 45° after the line of centers, in a gearlng of 36 teeth and 8 leaves. It can drive it till the point *t* touches the leaf at a position a little beyond *P 9*, or about 37°, and the remainder of the 45° of driving will be done by the following tooth, acting before the line of centers. This action before the line of centers is very objectionable, because the point of the pinion leaf digs into the side of the tooth. There is no way of preventing this and maintaining an equal force except by forming another curve on the point of the leaf. That, however, is considered too expensive to be practical, and the usual course is to "let her jab." If there were 7 or 8 (instead of 4½) times as many teeth as leaves, as is generally the case, the end of the curve (*6* to *v*) would come nearer to the center of the tooth, the tooth would be longer to the crossing *t*, and would drive the leaf further after the line of centers. Instead of marking only 10 positions, the drawing can, of course, be made on a larger scale and as many positions marked as desired, thus getting more points for forming the outline of the tooth.

Briefly stated, then, the process of finding the proper curve for the teeth of any specified gearing is, 1st. Draw the acting radii of one tooth and one leaf in any convenient number of positions during the period of contact, above the line of centers, and find the proper virtual lengths of these radii. 2d. Mark these lengths upon the respective pinion radii, and from each such mark draw a curve concentric with the wheel to meet the corresponding wheel radius. 3d. Take the length of each such curve and transfer it to the corresponding curve on a blank tooth with straight radial sides, measuring from each side of the blank and marking where it comes on the curve. 4th. Connect each series of marks by a curved line, and these two curved lines give the proper form for the point of the tooth.

This is a practical and rational method for finding the exact form of tooth suited to any specified case, which will drive the pinion leaf with both uniform velocity and uniform force, and will obtain the most perfect action and the best results practicable in the given conditions. I do not know whether it is original with myself or not, but I have no recollection of ever seeing it mentioned anywhere. At all events it is worth the attention and adoption of the trade. I have never met a practical watchmaker who had drawn a tooth for actual use, to suit a particular size of wheel and pinion, by the so-called cycloid or epicycloid systems, but any intelligent apprentice who has carefully read these articles should be able to work by this method and get a rigorously correct result. It would also be easy to construct an odontograph on this principle which, after being set to the proper number of teeth and leaves, should automatically mark out the curve required for the points of the teeth in such a gearing.

AMOUNT OF WORK DONE, LOSSES BY FRICTION, ETC.

When considering Fig. 37, we saw that both the virtual length of the lever and the speed of lifting the weight were constantly changing, and in order to find the amount of work done, it would be necessary to get the *mean* or average of the length of the lever and the speed during the given time. As neither of them changes at a constant rate, this mean would be difficult to ascertain and the problem would be a rather intricate one. With improperly formed teeth the action is precisely that shown in Fig. 37. The virtual lengths of both the wheel and pinion radii are constantly changing, which, of course, changes both the velocity and the force of the driving. But now that we have teeth so formed that the ratio between the virtual lengths of the wheel radii and those of the pinion remains always the same, whether on or off the line of centers, the problem becomes simpler. It is, of course, understood that my remarks about perfect action refer only to the action after the line of centers.

In calculating the amount of work done it is supposed, or at least intended, that a constant amount of power is given out at the last piece in the train. We may therefore consider that the work to be done is equivalent to the raising of a weight, suspended from a cord running over a pulley on the arbor of the pinion, which is the end of the train. It is evident then that equal amounts of work will be done for equal distances through which the weight is lifted, or for equal angular distances that the pinion and pulley turn on their axis, in a given time—say one second for each 10° that they turn. Supposing the power applied to the wheel to be constant, the wheel also gives out a constant amount of power in driving the pinion, *i. e.*, equal amounts for equal angular distances moved by i . In such a case the amount of work done is measured by the amouut of the angular movement of the pinion or the distance the weight is lifted, and it is the product of the weight that can be lifted, into the distance it is lifted in a given time—say one second, into the number of seconds this work continues to be done. If the weight which can be so lifted is less than the amount given by our calculation from the numbers of the train as explained in a previous article, the deficiency is the amount of loss by friction and other resistances. For, if the teeth are-so formed that the virtual radii of the wheel and the pinion always retain the same ratio in lengths that they have on the line of centers, it is evident that the calculation of a train of gearing becomes simply a calculation from the numbers of the teeth and leaves in the train, as there explained. If the workman has carefully read these articles, I think he will now have a better idea of the nature and requirements of wheel and pinion gearing than before. In concluding this subject I would suggest that he re-read them all, as he will find them much easier to understand when read together than in sections, and they will be better kept in memory. They have appeared in THE CIRCULAR for January, July, August, September, October and November.

OIL STONE.—Carpenters and other mechanics who keep up with the time, now use a mixture of glycerine, instead of oil for sharpening their edge tools. Oil, it is well-known, thickens and smears the stone.

TRADE GOSSIP.

—J. J. Cohn, manufacturing jeweler, has moved from 41 Maiden Lane, to 31 Maiden Lane, New York.

—On December 3, Theo. F. Lane, from the main office at Wallingford, Conn., of the R. Wallace & Sons Mfg Co., assumed the management of their Chicago branch, at 104 State street.

—Weis & Oppenheimer, 11 John street, New York, struck the popular taste with their new watch case, the "Henrietta." The demand has exceeded expectations, and orders have to be filled in turn.

—A suit has been filed in the United States Court, in Philadelphia, Pa., by S. F. Merritt, Springfield, Mass., against James W. Queen & Co., of the former city, for infringment of his patent on eye-glass holders.

—The American Watch Tool Co., have just completed models of both a single and double case typewriter for E. M. Hamilton, which they claim are superior to anything in the same line yet brought out. The company are running full force on machines for American and English watch factories.

—The harbinger of the crop of calendars with which the CIRCULAR has annually been favored for twenty years is the pretty 1891 calendar from Hollinshed Bros., 806 Chestnut street, Philadelphia. The pictorial portion is a steel engraved copy of Jean Francois Millet's famous painting, "L'Angelus," which was purchased by the American Art Association for $116,000.

—L. C. Roessler, Cumberland, Md., has recently placed in his establishment an immense and handsome upright show-case. The case is of walnut, beautifully carved, and is twenty-one feet long, nine feet high and thirty-six inches deep, and is probably as handsome a one as can be found in any jewelry store in the State.

—In our last number of the CIRCULAR, in noticing the watch spring that has been introduced by L. H. Keller & Co., of 64 Nassau street, New York, we unfortunately omitted to mention the "brand" of the spring. We consider it important now to call the attention of watchmakers to it again, and remind them that the brand is  , and is on every package of the springs sent out by this firm.

—The clasp envelopes offered in the market for mailing packages of third and fourth class matter have heretofore been comparatively costly. This objection has now been remedied by the invention of Sewell's Chicago envelope clasp, which can be used on *any envelope*, bought in competition, in open market. It is the only clasp that gives this advantage; it is made of tough sheet brass; has been patented in America and Europe, and is endorsed by postmasters. Samples and full particulars may be obtained by writing to the Chicago Envelope Clasp Co., Chicago, Ill.

—We call the attention of manufacturing jewelers, who are looking for factory accomodations, to the building recently erected by Geo. W. Shiebler, on St. Marks' and Underhill avenues, Brooklyn, E. D., N. Y. This buildiug is constructed on the most approved style of New England factories, and has abundance of light, as much power as desired, vaults for valuables, and outside stairs as a precaution against fire. The rental is very moderate, and the building is within twenty-five minutes of Maiden Lane by the Brooklyn ferries and rail. There is now only to rent the upper floor, which is, in some respects, the most desirable in the factory, the other floors being occupied by the owner and other manufacturers. For terms inquire of Mr. Shiebler, 6 Liberty place, New York.

—The unprecedented rush at the factory of the New Jersey Lamp and Bronze Works, New Brunswick, N. J., and 92 Duane street, continued unabated up to the first of the year. The line offered by this company is exceedingly salable, and is gradually displacing the foreign goods in this country. The bronze piece they placed on the market this fall, entitled "The Fisherboy," by its moderate price and artistic conception has greatly increased their reputation in this department of their business. Placques, scutcheons, tables onyx-mounted, and lamps both banquet and piano, in antique brass and old silver, are together with bronzes, the staple products of their factory, and all of their goods have the merit of popularity. The remarkable demand shown for their manufactures this season has encouraged the company to undertake many new patterns for the coming year which will be offerred as the season advances.

—Ambrose Webster, of the American Watch Tool Co,, is a member of the Board of Commissioners of Sewers, of Waltham, Mass., who have recommended a plan for an efficient system of sewerage for a part of that town.

—Oscar Fromer has opened a jewelry store at Livermore, Cal. He will keep a very little but good stock, and will make a specialty of watch, clock and jewelry repairing. He is a proficient workman, having received a regular apprenticeship in Germany in his trade.

—The appreciation with which the Sterling Company's productions have been greeted from the most tasteful and discriminating purchasers in the trade has encouraged the company to extend their line into the field of large and more ambitious work. During the coming year the company will endeavor to convince their patrons that their reputation rests not alone on the production of small trinkets and novelties.

—In an article on the condition of the town of Culpepper, Va., published in the Culpepper *Exponent*, of December 23, space is given to a sketch of the establishment of H. C. Burrows, of that town. To quote: "We do not think that we exaggerate when we say that there is not a more handsome establishment than this in Piedmont, Va. Major Burrows was reared in our midst, served in the war of the rebellion when quite young, was taken prisoner, and suffered the tortures of prison life at Point Lookout. After the war, he, like thousands of others, bravely went to work, stemmed the current, and to-day is one of the leading jewelers of this section."

—Of that good-selling and profitable line of goods, ladies' fancy gold rings, one of the largest and most attractive assortments in the country is manufactured by Engelfried, Braun & Weidmann, 128 Fulton street, New York. This firm make a specialty of this line, and their constant endeavor to produce original and striking designs is crowned with success, their stock always containing something new and handsome. The house is long established, and, the three members being men of experience and practical training, their pro ductions are marked by perfect workmanship.

—One of the most expert horologists in the country is John C. Simmonds, 18 John street, New York. Through years of patient study and investigation he has mastered every branch of the art, and his skill, both from a practical as well as theoretical point of view, is second to none. His special skill, perhaps, is in making and repairing chronometer escapements, in which he claims to stand pre-eminent. Mr. Simmonds was originally a manufacturer of pocket-chronometers in England. Twenty-five years ago he came to America. He is a thorough repairer and adjuster, and deserves the patronage of the trade.

—Henry C. Haskell, Corbin Building, 11 John street, New York, has issued three pretty circulars and price-lists of some of the productions for which he is well-known throughout the jewelry trade. One pretty circular in gold and colors shows the famous razzle-dazzle puzzle ring, which is made in four sizes, in sterling silver, gold or platinum. The remarkable popularity of this ring seems still unabated. Another circular displays bangle, friendship and fancy rings, in gold and silver. The third circular shows silver nov elties. All these novelties are designed by Mr. Haskell, and each contains some novel and striking feature. They form a very popular and profitable line to jewelers, as they are just such trinkets as the ordinary person likes to give as tokens.

—Through the enterprise of Kent & Stanley, the well-known manufacturing jewelers of 7 Eddy Street, Providence, the word "Seamless" as applied to rolled plate chains has become a household word among the jewelry trade. Perceiving the merit of the seamless wire for this purpose a few years back, they bent all their energies to the successful solution of the difficulties attending its manufacture into chain. That they did succeed every jeweler in this broad land knows, and those in foreign lands are rapidly finding out. So great has been the growth of this branch of their business, that Messrs. Kent & Stanley have decided from this time forth to make *all their chains of seamless wire and not only the higher grades as heretofore*. And as a protection to their customers, they have also decided to stamp all the chains they make with a trade mark illustrated in their advertisement in this issue—a bird perched upon a piece of wire,—signifying that every chain so stamped is made of Burdon seamless wire. If the retail trade do not at once familiarize themselves with this trade mark it will not be through lack of opportunity, judging from the amount of the seamless goods of this firm they handle.

—C. E. Hansen, 108 West 23d street, New York, makes a specialty of fine diamond order work, and dealers having occasion for something a little out of the ordinary in this line should consult him. He has a fine shop and employs artisans of the highest skill.

—Hutchison & Huestis, manufacturers of solid gold rings, 185 Eddy street, Providence, have a very neat and original New Year greeting to the trade on another page of this issue, but it is no neater or more original than the line of rings they are showing this season.

—Koch & Dreyfus, the enterprising jobbers of 22 John street, New York, wish to extend to their customers the compliments of the season thanking them for the cordial relations that have existed during the past year and assuring them of renewed efforts to serve and to please for the coming year.

—One of the finest lines of diamonds and other precious stones shown during the holiday season was that carried by Alfred H. Smith & Co., 182 Broadway, New York. This house which has long been known as one of the largest diamond importing concerns in America, always have an extensive stock from which dealers may obtain selection.

At this season of the year class committees are engaged in selecting pins and rings and medals for the approaching commencement exercises. Jewelers are quite sure to have demands for these articles, and the first name that will occur to them in considering the giving out of such special work will be E. R. Stockwell's, 19 John street, the well known badge and medal maker, whose experience and facilities in this line are second to none.

—The handsomest calendar THE CIRCULAR has received so far this season comes from the well-known house of H. Muhr's Sons, Philadelphia, Pa. It is a large, blue-fringed card, having in its center a female figure in rich-colored costume, surrounding which are small cards arranged with artistic irregularity, one for each month, and at the top and bottom scrolls bearing the card of the firm and their various offices. Messrs. H. Muhr's Sons never do things by halves, and they have issued a calendar that will surely be admired and preserved.

—After January 1st, the firm of J. B. Laurencot, 33 Maiden Lane. will devote its entire attention to the importation and sale of optical goods, having now cleared out its stock of French clocks and Bronzes which hereafter will only be imported to order. Every thing in the line of optical goods will be dealt in and the firm's facilities for furnishing such goods at the lowest prices, and on the best terms, are second to none. E. W. Laurencot, from his establishment in Rue D'hauteville, Paris, will act as European buyer for the house there, and keep it supplied with everything both standard and novel in optical goods.

—The Craighead & Kintz M'f'g Co., manufacturers of artistic metal goods, Ballardvale, Mass., and 32 Barclay street, New York, are well satisfied with the year's business. The First Empire goods in white and gold which they put on the market the past season, have proved wonderfully popular. Such tasteful and handsomely finished work could hardly fail to please. They will greatly enlarge this desirable line for the spring trade, being at present engaged on new patterns of unusual novelty and elegance. Onyx tables will also be one of their leaders this season, all mounted and finished in their superior style of workmanship. New mirrors and fancy toilet articles of all descriptions will be added, and last, but not least, the "Daylight Lamp," with patent central draught burner shown in novel designs and all the popular finishes.

—The event in the trade in San Francisco, Cal., during the past month was the closing-out sale of the Louis Braverman & Co. Mr. Braverman opened the establishment in 1850, it being now the oldest jewelry house in San Francisco, and he has accumulated a fortune. The services of J. H. French, the New York auctioneer, whose reputation had extended to the Pacific Coast, were secured for the sale, and he has been closing out the stock at auction, since Nov. 17. It has been, probably, one of the largest auction sales of jewelry that has ever taken place on the continent. Mr. Braverman's stock consisted of nothing but fine solid silver, the most valuable and pure diamonds, and no jewelry less than 14 carat. During the early part of the sale, the receipts ran daily up into the thousands Mr Braverman expresses himself as well satisfied with the result. It is the intention of the firm to give up their store on Jan. 1st, and take an office for the final settlement of their affairs. Mess. Tyrell and Davis, assistants of Mr. French, have been making a sale for J. W. Brill, the jeweler of Danville, Va. Mr. French has also secured engagements for Mr. Tyrell for a sale at Rome, Ga., to commence early in January.

—Patek, Phillippe & Co., of Geneva, Switzerland, have appointed L. H. Keller & Co., of 64 Nassau street, New York, wholesale agents for their watches in the United States, (N. Y. City excepted), Messrs. Keller & Co, are now prepared to fill orders for the same.

—J. B. Wood, buyer for Chas. F. Wood, 169 Broadway, New York, left for Europe on the Steamer *La Bourgogne* on the 22th ult. Mr. Wood will be one of the earliest arrivals in Europe, of the great army of American buyers of diamonds and precious stones, and will thus haye the advantage of having the pick as it has always been the policy of this house to have the cream of the market. These early purchases will begin to arrive here during January and will continue during the spring months.

—Jacot & Son, musical box importers, of 298 Broadway, New York, report a heavy trade for the season just closing. Their interchangeable cylinders by means of which many tunes can be performed on the same instrument, have created a demand for musical boxes among the music-loving public, and the very moderate cost at which this taste can be gratified by these beautiful toned instruments will make the demand for them permanent. An illustrated catalogue of their importations containing price-list will be mailed on application to dealers and others interested.

—There is probably no tastier and more salable line of medium grade diamond and moonstone goods in the market than that shown by Lawson & Van Winkle, 11 Maiden Lane, New York, embracing pendants, scarf pins, bonnet pins, etc., in the pretty rosalines framed in diamonds, or moonstones, and in other popular combinations. These goods are commendable for their brilliant effect and moderate price, and large sales have testified to the desirability of this class of goods, in the trade to-day. Simple and effective combinations, striking effect and moderate price are the characteristics of Lawson & Van Winkle's line.

—Business has been remarkably brisk this fall at the extensive cut glass show rooms of C. Dorflinger & Sons, 36 Murray street, New York. The scintallating ware, now shown under the radiance of the electric light is seen here in its greatest variety. Their line embraces every form in which these popular goods appears, berry bowls, salad dishes, hocks, pitchers, claret jugs, water bottles, vases, globes, colognes, ice cream trays, etc., in all styles of cutting, several of their own invention. One advantage they have is an enormous stock kept constantly on hand, so that all orders can be promptly filled. The Messrs. Dorflinger are continually producing new designs at their large plant in White Mills, Pa., and will have to offer early in the season some striking and original conceptions in the cut glass line.

—The increase of business at the factory of the Essex Watch Case Co., 47, 49, and 51 Chestnut Street, Newark, N. J., has been phenomenal. Their shops only taken a year ago to meet the demands for their popular "Essex" cases, is crowded to its utmost capacity and another enlargement will be absolutely necessary soon. They have been making a specialty of raised gold and ornamented cases, in red, green, yellow and white, the designs being in the highest sense artistic both in conception and execution. They claim to be the only manufacturers of these cases in filled work, and the legitimate result of their enterprise, and the indefatigable efforts of their selling agent, Mr. Addison Conkling, has been a flood of orders with which they have found it difficult to cope. A custom of this company which may well be imitated, is the annual dinner to the employees, inaugurated last January. The second annual reunion will occur about the twenty-seventh of next month.

—The Waltham Dial Co., Waltham, Mass., recently organized by E. D. Wetherbee and Daniel O'Hara, have moved from their old factory on Crescent Street, into one formerly occupied by the Waltham Watch Tool Co., and are now prepared to turn out all kinds of watch and clock dials in large quantities. Their superior shop facilities will enable them to execute all orders promptly, as they expect to employ from 75 to 100 hands and utilize all the modern appliances as well as many patented improvemtnts. Watch factories are supplied with their patent machine-made dials and, while this department is in full and successful operation, they are also ready to undertake all difficult jobs in this line, such as cannot be done elsewhere, and special order work of whatever kind, guaranteeing the prompt and satisfactory execution of the same. If requested, dealers' names can be inscribed on dials ordered. This is the only establishment of the kind in the country, and jewelers should recollect that America now has a fully equipped dial factory, where all work in that line can be disposed of on short order and to the entire satisfaction of customers.

—During the eleven years that Alex. Wiederhold has been in business in the jewelry district, he has attained a reputation as an efficient repairer of jewelry. He repairs all kinds of jewelry, matches up lost pieces, and fills gold vest chains. His prices are moderate. His present address is 20 Maiden Lane.

—Maxheimer & Beresford, makers of fine diamond jewelry, 3 Maiden Lane, New York, have just closed a very successful year. They have built up their reputation on special order work, requiring skill and care, and as both partners are practical jewelers of thorough experience, they have won the confidence of the trade and command a large and growing business in this particular branch. With the New Year they will still further extend their facilities, and all order-work, even the most difficult, entrusted to them, will be promptly and carefully executed.

—Read & Lincoln, Providence, R. I., illustrate in this issue of the CIRCULAR, a patent bracelet of theirs called the "Shawomet," an extensible wire bracelet made to slide easily over the hand and then adjust itself to the wrist. It is formed of one continuous piece of wire fastened at three places and capable of sliding out when the two ends are drawn together by the fingers. It is made in sterling silver and rolled plate and is commanding a ready sale. Retailers who have not seen this latest novelty in bracelets should send to their jobbers for the "Shawomet."

—Hancock, Becker & Co., 54 Page Street, Providence, R. I., are in the market this season with the largest and handsomest line of white stone goods they have even shown. As they are never imitators, but do their own designing, they always have something new and attractive to offer. In fancy stone-rings they are making a special feature, taste in design and superiority of finish being characteristic of their line. Buyers can rest assured that the H. B. & Co. standard white-stone goods will be in the market along with the early birds and will be as good an investment for tne jobber as bank stock.

—Keller & Untermeyer, manufacturers of gold watch cases, 192 Broadway, New York (Corbin Building), are constructing a very substantial new factory, after the most approved ideas at Woodside, a suburb of Newark, N. J. The building which will be two stories in height and 100x100 feet in dimensions, is specially designed for the manufacture of watchcases, and will be the most thoroughly appointed factory of its kind in the country. All will be in readiness by April, when Messrs. Keller & Untermeyer will be in a position to satisfy all demands for their handsome line of diamond-ornamented and fancy gold cases.

—The Mt. Washington Glass Co., New Bedford, Mass., have just introduced the use of oil as fuel in their melting furnaces. It is working very satisfactorily and gives the best results, the steadiness of the heat insuring the most uniform results in the color and brilliancy of glass. They are just completing a new decorating shop to accomodate their increased business and are producing a fine line of novelties for the coming season in fine cut ware suitable for wedding and anniversary gifts. In Royal Flemish and Albertine ware they are also busy with new designs, so that they will be ready for the bnyers as soon as stock-taking is over.

—Frank H. La Pierre, manufacturer of sterling novelties, 18 East 14th street, New York, sailed for Europe December 31st, on the *Aller*, to be absent about six weeks. Mr. La Pierre goes abroad principally for rest, the pressure of the fall business of the house, which has been very large, having caused him to turn his gaz longingly toward the continent. But while resting for a season from the labors entailed upon him by his growing business, those who know him feel sure that he will keep one eye wide open for ideas and suggestions, and when the ingenious inventor of the "Shakespeare bangle" sets foot on American soil again he will doubtless have all matured in his mind a number of novelties quite as startling as the above.

—Ludwig Nissen & Co., manufacturers of fine diamond jewelry and dealers in diamonds, 18 John street, New York, have just closed a most successful season. Their line of fine diamond pendants, consisting of combinations of diamonds and pearls, moonstones engraved and surrounded with diamonds, opals of the first quality, beautifully set, and rare stones of all kinds suitable for pendants, was pronounced by the trade the handsomest in the market. Every stone employed by the firm is of the finest quality, no poor stones occuring to mar the brilliant effect of these superb pieces. Messrs. Nissen & Co., are a rapidly rising house, and their magnificent fall stock has done much to strengthen their hold upon the fine retail trade.

—Charles Spandan has moved from Washington, D. C., to 960 Liberty avenue, Pittsburgh, Pa., where he has a well-stocked and attractive store.

—A. J. Logan, manufacturer of watchsprings and tools, Waltham, Mass., has found it necessary to enlarge his quarters to take care of his increasing business.

—On December 16, Henry H. Truckenbrod of Mendota, Ill., was married to Miss Emma Erlenborn of the same town at the residence of the bride's parents.

—Oppenheimer Bros. & Veith of 35 Maiden Lane, New York, announce through our columns, that they will make a specialty of the Denver Hampden Watches. As this firm usually makes a success of anything they undertake this announcement means something good for the Denver Hampden Watches as well as for the trade in general.

—J. M. Rutherford, Philadelphia, the "jewelers' 'auctioneer," is now conducting in Pittsburg one of the largest and best sales ever made in the state,—the sale covering fully thirty thousand dollars—and at good prices.—He has two sales to conduct after he finishes this, and jewelers who wish to secure his services should not delay, for the "colonel" is in great demand.

—Herman Goldsmith, 33 John street, New York, says, that his year finished without any losses whatsoever. He has now on hand a full line of all kinds of precious stones, matched pairs of pearls, rubies, sapphires, opals, etc., which he is offering to the trade at very low prices. He seeks the coming year's business from the trade, and says he will take back all goods when the full value is not given.

—Mrs. Henry M. Stanley, wife of the famous African explorer, wears proudly upon her wrist one of the "Stanley" braclets in sterling silver, made by Foster & Bailey, of Providence,—and presented to the lady with the good wishes of the manufacturers. As a token of her husbands' popularity Mrs. Stanley was highly pleased with the sourenir and expressed her appreciation in a neatly worded letter which is highly prized by Messrs. Foster & Bailey.

—A beautiful Christmas token which reached the office of the CIRCULAR was "Noel" issued by Giles Bro. & Co., Chicago, Ill. "Noel" was a little 16 page book of short poems, maxims and thoughts. Each page was embellished by some emblemata of the jewelry trade taken direct from the stock which seem to be as pleasing to the eye as the arabesques, foliage and the like usually employed for such a purpose. The press work was in two delicate shades of ink and the paper upon which the matter was printed was of a fine soft quality. The last page showed a side view of the firm's beautiful store.

—The Pairpoint M'f'g Co., New Bedford, Mass., have recently made some very striking improvements in their New York store at 20 Maiden Lane. Elegant new wall cases mahogany have been put in along the entire Liberty Place side of the store and yet in such a manner as not to shut out the light. Among the improvements in construction may be noted sliding drawers in the base of the case, and shelves changeable at every inch Thus every available foot of space is utilized, an economy rendered absolutely necessary by the mammouth line of goods now manufactured by the Pairpoint Co.

—A recent visit to the Wadsworth watch case factory at Newport, Ky., proved very interesting. H. A. Wadsworth, the head of the firm thoroughly understands the manufacture of watch cases, having had over twenty-five years experiences. He is the inventor of a number of the machines and tools used in watch case making. The factory is equipped with the latest and most approved machinery and employs the best skilled workmen. This concern turn out a complete line of gold filled cases; their first production was finished in June, 1890, and was at once eagerly taken by the trade and accorded a place in the front rank, where they are now thoroughly established. The factory is now being enlarged.

—M. B. Bryant & Co., ring makers, 10 Maiden Lane, New York, can look back upon the year just closed as the most successful in their history. The demand for the well known "Bryant" initial ring has so increased that the annual output of this specialty alone constitutes a very respectable business. Then their large and attractive line of fancy rings of all kinds has come in for its full share of popularity, the net result of the year's business footing up a very handsome total. Messrs. M. B. Bryant & Co., however, do not feel at all as though their enterprise and ingenuity were exhausted. They promise to more than sustain their reputation the coming year, and will be early in the market with as fine a line of samples as can be seen anywhere.

—The stock of discontinued Trenton watches which S. F. Myers & Co., recently purchased, is moving so fast that the firm have diminished their advertising.

—Otto H. Wolff, formerly with Bruhl Bros. & Co., will after January 1, represent Bippart & Co., manufacturers of jewelry, Newark, N. J., in New York city and the East.

—In considering and arranging plans for 1891, manufacturing jewelers would do well to inquire into the processes controlled by the International Aluminum Co., of 36 John street, New York. The company make an anouncement on another page which should be read.

—H. Ludwig & Co., have recently had completed for them an extensive factory with a floor space of 10,000 square feet, at the corner of Gay and Blackstone streets, Providence, R. I. They will manufacture a popular line of novelties in jewelry, such as bar pins, brooches, drops, scarf pins, bracelets, etc. The firm's line for the season was completed December 15, and is a very extensive one containing numerous unique designs. The assortment of hoop ear-rings is particularly large, and they claim the cheapest in the country. The firm's New York office is in the Prescott Building, Room 40.

—One of the handsomest holiday editions of the various literary publications of the country was the Christmas number of *Smith, Gray & Co'.s Monthly*. Gothen up after the manner of the well-known *Life*, it surpassed the ordinary number of that humorous journal, in both artistic and literary excellence. *Smith, Gray & Co'.s Monthly*, as it name indicates is a monthly humorous journal issued the 1st of each month by the widely-known clothing house of Smith, Gray & Co., Brooklyn and New York. This journal is a striking proof of the helpfulness to business, of advertising, as the firm must invest thousands of dollars a year in its publication. One million copies are circulated during a year.

—The beauty of silver deposition as shown upon crystal glass, &c., producing such elegant effects in etched and rèpoussé work, has been hitherto marred by the blackness shown upon the inner surface of the glass. Recognizing that their repoussé or chased designs were thus marred, The Wymble Manufacturing Company, Newark, N. J., at once set about overcoming the difficulty, and claim to have succeeded admirably in producing an entirely clear and white effect, thus adding to the finished appearance of silvered crystal with nothing unsightly to the eye. Their elegant work is seen upon they counters of the Whiting's, Gorham's, Starr's and others. The Wymble Manufacturing Company notwithstanding their recently added floor, find more room necessary, and will in the spring remove to their large and commodious new factory now building at Woodside, N. J.

Among the Watch and Clock Companies.

—The Columbus Watch Co. have increased their capital stock from $200,000 to $500,000.

—The Hampden Watch factory, at Canton, O., is said to have been turning out 500 movements a day, which is about 200 more than were made at Springfield, Mass.

—The E. Howard Watch and Clock Co. have placed a fine clock in front of the store of B. F. Norris, Alister & Co., Chicago. It strikes the hours and half hours upon a large bell.

—The Deuber-Hampden factories closed all but the finishing, engraving and engine-turning departments on December 15th for stock-taking and repairs, and will re-open on January 5th.

—The committee appointed to solicit subscriptions to the stock of the Otay Watch Company have raised a little more than one-third of the $75,000 required, and all the members are very hopeful that the enterprise will be once more put into working order.

—On December 9 Judge Shipman, of the United States Court, dismissed the suit of the Western Electric Company against the New Haven Clock Company for alleged infringement of patent on "an automatic signaling apparatus." The electrical department of the clock company has been manufacturing the device for a considerable period. It is used by the district telegraph system, and the industry involved in the manufacture is large and profitable. The Firman (Western Electric Co.) patent was issued July 3, 1887. The improvements owned by the New Haven Clock Company were patented at a later date.

—Mr. Penniman, of Penniman & Co., San Francisco, states that his firm have orders booked ahead for several thousand dollars worth of movemnts, which the Otay Watch Company would now be able to deliver had their work not been interfered with. The firm are daily selling Otay watches, and claim they are giving purchasers ample satisfaction.

—Schellenberger, the watch factory promotor, has offered to establish a watch and clock factory at Carroll, Iowa, with a capital stock of $150,000, on condition of the donation of a tract of forty or fifty acres and the subscription of $25,000 additional stock. Between 400 and 500 men are to be employed. The proposition is said to be looked on with favor by the citizens of Carroll.

—A party of Dayton (O.) capitalists last month proposed to move the Columbus Watch Factory to their town. Their plan was to have the company increase their capital stock, for which they, in consideration of the removal to Dayton, would be willing to subscribe. It was the intention of the Columbus Watch Company to make a change of their capitalization, and it is understood that no change of location will for the present be made.

—The American Waltham Watch Co. have recently brought out a new six-size movement named "K." This is made in fine nickel, with fifteen ruby jewels (the jewels on top plate in gold settings), exposed pallets, compensation balance, patent Breguet hair-spring, extra fine sunk seconds dial, and with pendant setting. The Waltham company have also issued a new 18-size non-magnetic movement known as No. 40. It has fifteen ruby jewels in gold settings, compensation balance, is adjusted to heat, cold and position, and has the patent Breguet hair-spring and double sunk dial.

—The new model watch that Superintendent Cain, of the Aurora Factory, is now working on is now expected to be out any day. It is a complete change from the present model, and cannot fail to meet the approbation of the jewelers of the country. The model of the six-size is also being re-modelled, and when in shape will be one of the handsomest ladies' watches now on the market. There are now 76 hands at work in the factory, and new ones are being added daily. When the new model is out it will make business lively, for until then the plate job will not be able to do anything.

—Charles Teske, of Hartford, has caused an attachment of $50,000 to be placed on the vacant plant of the Hampden Watch Company, at Springfield, Mass, the outcome of the difficulties over patent rights. Mr. Teske asserts that he invented a regulator, which has been applied to all the watches made by the company; that it was agreed to pay him a certain amount for each regulator, not to sell the regulators separate from the watches, to stamp his name on each, and to give him credit in the price-lists. The plaintiff asserts that these conditions have been violated, and has engaged ex-Gov. Robinson as his counsel to press the suit.

—Mr. Dueber, in an interview with a Canton *Democrat* representative, said that the Aurora plant will not occupy the buildings at Springfield, Mass., as he owns them and would not consent to it. He has ordered an immediate sale of them, however. The reporter also talked with one of Rood's particular friends in Canton, and learned from him that Mr. Rood is a large owner in the Aurora works, and that the syndicate now operating that concern is not making any new watches, but finishing for the market the material now on hand. This gentleman says it is highly probable that Mr. Rood will move the Aurora machinery to the old Hampden quarters in Springfield.

—Springfield (Mass.) *Republican* of a recent date said: "A syndicate, in which Charles D. Rood and Henry Cain, of this city, are interested, have lately bought the Aurora Watch Factory, and already there are well defined rumors that the business will be transferred to this city. Mr. Rood, it will be remembered, entered into negotiation with the same concern last summer, looking forward to a control of the corporation, the whole matter finally falling through, owing to a restriction imposed that the business should not be moved elsewhere for a term of years. This time, however, no conditions of any sort were stated, and the whole industry is free to proceed wherever the stockholders wish. Mr. Rood, who is in the city for a few days, said last night that no decision has been made as to the future location of the industry, although a number of advantageous offers had been made by the various cities. The syndicate is of so short standing that no officers have yet been elected, although a list will soon be chosen. It is understood that some of the company's stock is held by Aurora citizens, who would doubtless oppose a transfer of the business elsewhere, yet Mr. Rood admits that he, in company with Mr. Cain, own considerable stock. While Mr. Rood does not commit himself on the probable location, there are some who hope it may be brought to Springfield."

SPECIAL NOTICES.

RATES $1.00 per insertion for notices, not exceeding five lines; additional words 1 cent each. If answers are to be forwarded, postage stamps must be enclosed. Two insertions, 10 per cent. off; Three insertions 15 per cent. off; Four insertions 25 per cent. off. ***Payable strictly*** in advance.

WOODCOCK'S SCHOOL FOR WATCHMAKERS, Winona, Minn., offers unrivalled facilities for acquiring a thorough practical knowledge of every branch of the business. Terms very reasonable.

A CHANCE OF A LIFETIME.—The advertiser has a farm of 160 acres, in Nebraska, which he will exchange for watches, jewelry and diamonds. The location is very good. Full description will be furnished upon application. Address, G. A. LOCKWOOD & SON, Chariton, Iowa.

A GOOD CHANCE—STOCK OF WATCHES Jewelry, Materials and Fixtures, for sale, in the best city of Minnesota. Good run of repairing. The store has been established for five years, and managed by a first-class watchmaker, who is compelled to sell out on account of bad health. Stock amounts to $1800. Will reduce price in order to sell quick. Rent is very low and long lease can be obtained. Address, BARGAIN, Care THE JEWELERS' CIRCULAR.

WANTED.—A situation by a general engraver (Canadian); one where he can fill in time as salesman preferred. Address, J. C. G., Station A., South End, Boston, Mass.

W. A. SCHROETER, 198 Grand Street, New York City. Estimates rendered on any desired job. Four expert Watch Repairers employed specially for Trade Work. Guaranteed finely finished at low prices. Also a good chance for a young man to study Watchmaking.

WANTED—To correspond with a traveling salesman in the jewelry trade with a view to introducing a valuable article in connection with his regular business. Address REX, care of the JEWELERS' CIRCULAR.

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☞ **Special notices received up to the 25th of the month.**

Editor JEWELERS' CIRCULAR:

LOCKPORT, N. Y., March 14, 1890.

A few weeks since I sent you an advertisement mentioning that I had a show window to let to a watchmaker. From that advertisement I have received more than twenty communications, and the window is occupied with my own wares, having concluded not to rent it. *Does advertising pay?* I should remark, THAT IT DOES. In answer to advertisement in your paper, I received letters from all parts of the country.

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Lorsch, Albert & Co.—Importers of Precious Stones. 37 Maiden Lane, N. Y. See Back Cover.

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